

<110> Gregory J. Hinkle  
Jingdong Liu  
Linda T. Parker

<120> Novel Plant Transcribed Regions and Uses Thereof

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<150> 60/228,466

<151> 2000-08-29

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Glu Cys Ile Phe Val Val Leu Gln Gln Gln Gly Pro Asp Tyr Met Val  
5 10 15

cgc aac gca agg agg tcc atg ctg gag gag ctg gag ggg atg ctg gag 153  
Arg Asn Ala Arg Arg Ser Met Leu Glu Glu Leu Glu Gly Met Leu Glu  
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atc gtg gag cct cag ccg ccg ggg aag ccg agg acg ctt agc cgc agg 201  
Ile Val Glu Pro Gln Pro Pro Gly Lys Pro Arg Thr Leu Ser Arg Arg  
35 40 45 50

agg ttc gat ctc cca gaa ggc gta gcc atc gaa aag gag acgcgggagg 250  
Arg Phe Asp Leu Pro Glu Gly Val Ala Ile Glu Lys Glu  
55 60

cgggcaagtg aagtgcacgc gtgggtggtg gcatgcttgg gcagtttggt atatgcgcga 310

tgcggactat agagtttgag tttgtgctgc taccgaaccg tggaccacct taccctgttg 370

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  Met Ala Lys Thr Pro Ser Phe Ala Val Ala Ala Val Ala Gly Gly
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cgc ggg ccg gtt cac aac cgg acc cag ctc ctc ctc ctc ctc ctc gtg      155
  Arg Gly Pro Val His Asn Arg Thr Gln Leu Leu Leu Leu Leu Leu Val
            20             25             30

gcc gtc gca gcc tcc gca tcc aca gca ggg ttc ctc ctc cgc ggt gcc      203
  Ala Val Ala Ala Ser Ala Ser Thr Ala Gly Phe Leu Leu Arg Gly Ala
            35             40             45

ctg cga gac cct tgc gac ggc cgt ggg gac ccc gcc gcc ctc aac acc      251
  Leu Arg Asp Pro Cys Asp Gly Arg Gly Asp Pro Ala Ala Leu Asn Thr
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gcc gtc gcc agc ggg agt ccc ctc ggg ttc atg agg tcc aag ctc gtg      299
  Ala Val Ala Ser Gly Ser Pro Leu Gly Phe Met Arg Ser Lys Leu Val
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ctc ctc gtc tcc cat gag ctc tcc ctc tct ggt ggt cca ctt tta ctg      347
  Leu Leu Val Ser His Glu Leu Ser Leu Ser Gly Gly Pro Leu Leu Leu
            80             85             90             95

atg gaa tta gca ttt ctt ctg agg cat gtt ggc tgc caa gtg gtg tgg      395
  Met Glu Leu Ala Phe Leu Leu Arg His Val Gly Ser Gln Val Val Trp
            100             105             110

ata aca aac cag aga tca caa gaa aca aat gat gtc aca tat agc ttg      443
  Ile Thr Asn Gln Arg Ser Gln Glu Thr Asn Asp Val Thr Tyr Ser Leu
            115             120             125

gag cat agg atg ttg aac cat gga gtg cag gtt tta cca gct aga gga      491
  Glu His Arg Met Leu Asn His Gly Val Gln Val Leu Pro Ala Arg Gly
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cag gag gca gtt gat att gct cta aaa gct gat ctg gtt atc tta aac      539
  Gln Glu Ala Val Asp Ile Ala Leu Lys Ala Asp Leu Val Ile Leu Asn
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act gct gtt gct ggc aag tgg ctt gac cct gtt ctg aaa gat cat gtt      587
  Thr Ala Val Ala Gly Lys Trp Leu Asp Pro Val Leu Lys Asp His Val
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cct aaa gtc ctt ccg aag att ttg tgg tgg atc cat gaa atg cgt ggg      635
  Pro Lys Val Leu Pro Lys Ile Leu Trp Trp Ile His Glu Met Arg Gly
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Ala Pro Leu Ala Lys Asn Ile Val Arg Leu Ala Ser His Ala Glu Gln  
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Arg Val Ser Met Gly Glu Lys Gly Tyr Gly Arg Val Lys Glu Met Phe  
435 440 445

atg gag cac cac atg gct gag agg atc gcg gcg gtg ttg aag gat gtc 1451  
Met Glu His His Met Ala Glu Arg Ile Ala Ala Val Leu Lys Asp Val  
450 455 460

ctg agg aaa tca cag gag cac tcc agg tct tga gctttgccgt gcccacgac 1504  
Leu Arg Lys Ser Gln Glu His Ser Arg Ser  
465 470

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tgtagattgc actctgttgg tctacttttt cacattcatg tttacctat taggccatgt 1624

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tat agc agc tca tct ttt gga cta tca ggt gct agt tat ata tca tcc 96  
Tyr Ser Ser Ser Ser Phe Gly Leu Ser Gly Ala Ser Tyr Ile Ser Ser  
20 25 30

ccc atg agg gaa aca gag cag tca aag act agt ttt gac cag ttt tat 144  
Pro Met Arg Glu Thr Glu Gln Ser Lys Thr Ser Phe Asp Gln Phe Tyr  
35 40 45

tct aat gcc aat ttc cag ttg tat ttg tcc ttc tgc aac ttt gac aag 192  
Ser Asn Ala Asn Phe Gln Leu Tyr Leu Ser Phe Cys Asn Phe Asp Lys  
50 55 60

gca atg ttc ttg ggt ttc ttt cat gag cta tcc gag ctt ccc ttt gaa 240  
Ala Met Phe Leu Gly Phe Phe His Glu Leu Ser Glu Leu Pro Phe Glu  
65 70 75 80

ctg caa aga aaa gct gtc aga gat ttg aag act tct ctg agc ggt gaa 288  
Leu Gln Arg Lys Ala Val Arg Asp Leu Lys Thr Ser Leu Ser Gly Glu

				85				90				95							
aat	gaa	att	tgg	cat	tct	atg	gtc	tac	aat	ggg	ttt	ttt	gaa	gca	ttc	336			
Asn	Glu	Ile	Trp	His	Ser	Met	Val	Tyr	Asn	Gly	Phe	Phe	Glu	Ala	Phe				
100								105				110							
cat	gaa	ttc	ctc	aag	aat	gac	agt	gga	att	cac	aca	ctg	caa	gct	cga	384			
His	Glu	Phe	Leu	Lys	Asn	Asp	Ser	Gly	Ile	His	Thr	Leu	Gln	Ala	Arg				
115								120				125							
agg	gct	ggg	att	cag	ttt	ttt	ctt	gct	ttc	ctt	tct	agt	ggc	agg	gct	432			
Arg	Ala	Gly	Ile	Gln	Phe	Phe	Leu	Ala	Phe	Leu	Ser	Ser	Gly	Arg	Ala				
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cga	att	cct	tca	gtt	tgt	gaa	gat	gtg	gta	ctt	ctg	att	gca	tca	cta	480			
Arg	Ile	Pro	Ser	Val	Cys	Glu	Asp	Val	Val	Leu	Leu	Ile	Ala	Ser	Leu				
145								150				155				160			
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His	Asp	Ser	Glu	Phe	Lys	Gln	Glu	Ala	Leu	Leu	Ile	Val	His	Glu	Leu				
				165								170				175			
ctt	cag	gaa	cca	agc	tgt	cca	aaa	tct	agt	ctc	atg	gcc	tcc	att	ctt	576			
Leu	Gln	Glu	Pro	Ser	Cys	Pro	Lys	Ser	Ser	Leu	Met	Ala	Ser	Ile	Leu				
180								185				190							
tct	cct	tca	gtg	ttt	gga	gct	ttg	gac	agt	gga	gaa	acc	aag	tgc	ctg	624			
Ser	Pro	Ser	Val	Phe	Gly	Ala	Leu	Asp	Ser	Gly	Glu	Thr	Lys	Cys	Leu				
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gac	ctc	gct	ctg	cag	atc	atc	tgc	aag	att	tca	tct	gat	aat	gat	ata	672			
Asp	Leu	Ala	Leu	Gln	Ile	Ile	Cys	Lys	Ile	Ser	Ser	Asp	Asn	Asp	Ile				
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Lys	Ser	Tyr	Leu	Leu	Ser	Ser	Gly	Ile	Val	Ser	Arg	Leu	Ser	Pro	Leu				
225								230				235				240			
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Leu	Gly	Glu	Gly	Lys	Met	Thr	Glu	Cys	Ser	Leu	Lys	Ile	Leu	Arg	Asn				
				245								250				255			
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Leu	Ser	Asp	Val	Lys	Glu	Thr	Ala	Gly	Phe	Ile	Ile	Arg	Thr	Gly	Asn				
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tgc	gtc	agc	tcc	att	tca	gat	cat	ctg	gac	act	gga	agc	cac	agc	gaa	864			
Cys	Val	Ser	Ser	Ile	Ser	Asp	His	Leu	Asp	Thr	Gly	Ser	His	Ser	Glu				
275								280				285							
cgt	gaa	cat	gcg	gtg	gtc	atc	ctt	cta	ggg	gta	tgc	tcc	cac	agt	cct	912			
Arg	Glu	His	Ala	Val	Val	Ile	Leu	Leu	Gly	Val	Cys	Ser	His	Ser	Pro				
290								295				300							
gag	gtt	tgt	tca	ctt	tcc	atg	aag	g											

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 Leu Leu Gln Leu Leu Arg Asn Phe Arg Arg Cys Asp Gln Phe Ser Ser  
 340 345 350

tca tgc tca aga gag ctt gct gtc gat cat gtt tca gag aac act cgc 1104  
 Ser Cys Ser Arg Glu Leu Ala Val Asp His Val Ser Glu Asn Thr Arg  
 355 360 365

aat ggt tca att tgc atg cag ccg ata tca aag tca gcc cgg tat att 1152  
 Asn Gly Ser Ile Cys Met Gln Pro Ile Ser Lys Ser Ala Arg Tyr Ile  
 370 375 380

tca aga aag ctc aac ctt ttc tca aaa cct cgg tcg ctg acc ctg gct 1200  
 Ser Arg Lys Leu Asn Leu Phe Ser Lys Pro Arg Ser Leu Thr Leu Ala  
 385 390 395 400

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cagatgtaca gatagtagca ggtagcggttc gtcgagatga aatgtttgtg ggaggctttt 1313

taaaactcac catgtatttc aagagttttt attagttttt tttggatttt ctttactggc 1373

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atctctcc atg ggc cag atc gag agc cag gtc act cct cca gcg gag gag 170  
 Met Gly Gln Ile Glu Ser Gln Val Thr Pro Pro Ala Glu Glu  
 1 5 10

cct tct cca ccc acc gtg gag ccg tcg ccg tcg tct cct gcc ccg cct 218  
 Pro Ser Pro Pro Thr Val Glu Pro Ser Pro Ser Ser Pro Ala Pro Pro  
 15 20 25 30

ccg tct tcc ctt gag gcg att gct gca gaa gcc atg tca ttt gat gag 266  
 Pro Ser Ser Leu Glu Ala Ile Ala Ala Glu Ala Met Ser Phe Asp Glu  
 35 40 45

gat gac act gag gag tca atc gat gtg aag gta cag aaa gct ctg gac	314
Asp Asp Thr Glu Glu Ser Ile Asp Val Lys Val Gln Lys Ala Leu Asp	
50 55 60	
tgt cca tgt gtt gct gat ttg aaa aat ggt cct tgt gga ggt caa ttc	362
Cys Pro Cys Val Ala Asp Leu Lys Asn Gly Pro Cys Gly Gly Gln Phe	
65 70 75	
gtc gat gca ttt tcc tgc ttt ctc agg agc aga gaa gaa gag aag gga	410
Val Asp Ala Phe Ser Cys Phe Leu Arg Ser Arg Glu Glu Glu Lys Gly	
80 85 90	
tca gat tgc gtg aaa ccc ttc atc aca ttg cag gac tgc atc aaa gca	458
Ser Asp Cys Val Lys Pro Phe Ile Thr Leu Gln Asp Cys Ile Lys Ala	
95 100 105 110	
aat cca gag gca ttc tct aag gag att ctg gag gaa gag gaa aat gat	506
Asn Pro Glu Ala Phe Ser Lys Glu Ile Leu Glu Glu Glu Glu Asn Asp	
115 120 125	
gag gag gca gat aag tcc aac ctg aaa gtt aga gct cca tca tgg tcc	554
Glu Glu Ala Asp Lys Ser Asn Leu Lys Val Arg Ala Pro Ser Trp Ser	
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Arg Glu Ser Lys Pro Lys Val	
145	
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aagccctaag tttgccagta gtagactgat ttcagagagc gaggtatcat aaattgatta	848
acagaaatac ccatatTTTT tgtataagaa atgcttcatg gtatccacaa ttttagaatg	908
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gcg tcc tcc ggc gcg ccg ccg ccg agc cgc ccg gac tgg atg ctc ttc 147  
Ala Ser Ser Gly Ala Pro Pro Pro Ser Arg Pro Asp Trp Met Leu Phe  
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ggc aca tcc tcc cca ttc cct gac cct gag atg cag gct tct tca cgc 97  
Gly Thr Ser Ser Pro Phe Pro Asp Pro Glu Met Gln Ala Ser Ser Arg  
20 25 30

agc gct tta cgc ttg ttc cca gtt cgt gag ccc cct aag ata ttg gat 145  
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ctacc

1040

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tctttttctc cgcccaca atg ggt aaa gct aaa aag gga cca aag ttt gct      171
                Met Gly Lys Ala Lys Lys Gly Pro Lys Phe Ala
                1                    5                        10

ggt atg aag aag att gtc act tcc aaa gca atc aaa agc tac aaa gaa      219
Val Met Lys Lys Ile Val Thr Ser Lys Ala Ile Lys Ser Tyr Lys Glu
                15                    20                        25

gag gtt ttg aac cca gaa aag aag aat ctt atg aag gaa aag tta ccc      267
Glu Val Leu Asn Pro Glu Lys Lys Asn Leu Met Lys Glu Lys Leu Pro
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aga aat gtt cca act cat tct tca gcg ctt ttc ttt caa tac aac act      315
Arg Asn Val Pro Thr His Ser Ser Ala Leu Phe Phe Gln Tyr Asn Thr
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gca ctg gga ccc cct tat cgt gtt ttg gtg gac acc aac ttc atc aat      363
Ala Leu Gly Pro Pro Tyr Arg Val Leu Val Asp Thr Asn Phe Ile Asn
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Phe Ser Ile Gln Asn Lys Leu Asp Leu Glu Lys Gly Met Met Asp Cys
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tta tat gca aaa tgc acc cct tgt att acg gac tgt gtg atg gca gaa      459
Leu Tyr Ala Lys Cys Thr Pro Cys Ile Thr Asp Cys Val Met Ala Glu
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ctc gag aag tta ggc caa aaa tat cgt gta gct cta agg att gcc aag      507
Leu Glu Lys Leu Gly Gln Lys Tyr Arg Val Ala Leu Arg Ile Ala Lys
                110                    115                        120

gat cct cga ttt gag aga ata cta tgt act cat aaa ggg acc tat gct      555
Asp Pro Arg Phe Glu Arg Ile Leu Cys Thr His Lys Gly Thr Tyr Ala
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Asp Asp Cys Leu Val Glu Arg Val Thr Gln His Lys Cys Tyr Ile Val

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Val Pro Ile Met Tyr Ile Thr Lys Arg Lys Tyr Ser Ile Glu Arg Leu				
	175	180	185	
cct gaa gca aca att ggt gga gct cca aga att tga tgcagtaaaa				745
Pro Glu Ala Thr Ile Gly Gly Ala Pro Arg Ile				
	190	195		
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gtatcatggc aaaccttgga gagtgtctga actatgatga cattttcata gttctgggct				1045
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aacaagacca caccacacc atg agc gtc atc gac att ctc acc aga gtt gat				172
	Met Ser Val Ile Asp Ile Leu Thr Arg Val Asp			
	1 5 10			
tcc att tgc aaa aag tac gac aaa tac gac gtc caa agc caa agg gac				220
Ser Ile Cys Lys Lys Tyr Asp Lys Tyr Asp Val Gln Ser Gln Arg Asp				
	15 20 25			
tcc aat ctc tcc tcc gac gat gca ttc gcc aaa ctc tac gcc tcc gtc				268
Ser Asn Leu Ser Ser Asp Asp Ala Phe Ala Lys Leu Tyr Ala Ser Val				
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gac gcc gac att gag gcc tta ctt cag aaa gca gat acc gct tcc aag				316

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gag	aaa	agt	aag	gca	tcc	act	gtg	gcg	atc	aat	gcc	gag	att	cgt	cga	364
Glu	Lys	Ser	Lys	Ala	Ser	Thr	Val	Ala	Ile	Asn	Ala	Glu	Ile	Arg	Arg	
60					65					70					75	
acc	aag	gct	agg	ttg	ttg	gag	gag	gtt	ccc	aag	ttg	cag	aaa	ttg	gct	412
Thr	Lys	Ala	Arg	Leu	Leu	Glu	Glu	Val	Pro	Lys	Leu	Gln	Lys	Leu	Ala	
				80					85					90		
atg	aaa	aag	gta	aag	ggg	ctt	tca	tca	caa	gaa	ttt	gct	gcc	cgt	aat	460
Met	Lys	Lys	Val	Lys	Gly	Leu	Ser	Ser	Gln	Glu	Phe	Ala	Ala	Arg	Asn	
			95					100					105			
gat	ttg	gct	ctt	gca	ttg	ccg	gat	agg	att	caa	gct	atc	cca	gat	ggg	508
Asp	Leu	Ala	Leu	Ala	Leu	Pro	Asp	Arg	Ile	Gln	Ala	Ile	Pro	Asp	Gly	
		110					115					120				
acc	cct	gca	gca	tcc	aaa	caa	act	gga	agt	tgg	gca	gct	tca	gcc	tca	556
Thr	Pro	Ala	Ala	Ser	Lys	Gln	Thr	Gly	Ser	Trp	Ala	Ala	Ser	Ala	Ser	
	125					130					135					
cgt	cct	gga	att	aaa	ttt	gat	aca	gat	ggg	aaa	ttc	gat	gat	gaa	tac	604
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Gln	Val	Pro	Leu	Met	Asp	Glu	Ile	Asp	Thr	Lys	Val	Asp	Arg	Ala	Ser	
	205					210					215					
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Ser	Asp	Leu	Lys	Asn	Thr	Asn	Val	Arg	Leu	Arg	Asp	Thr	Val	Asn	Gln	
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Leu	Arg	Ser	Ser	Arg	Asn	Phe	Cys	Ile	Asp	Ile	Val	Leu	Leu	Ile	Ile	
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Lys	Phe	His	Asp	Thr	Val	Asn	Asp	Gln	His	Ser	Ala	Asn	Ile	Pro	Ser							
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Gln	Gly	Ser	Asp	Val	Ser	Tyr	Ser	Ser	Gln	Ser	Ala	Pro	Leu	Thr	Thr							
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Pro Lys Pro Thr Thr Thr Gln Ala Tyr Gln Tyr Asp Ser Asn Tyr Gln	
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His Glu Glu Arg Pro Lys Gly Tyr Leu Phe Asn Arg Pro Pro Pro Pro						
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Pro Gly Glu Ser Arg Lys Trp Glu Asp Trp Glu Leu Pro Cys Tyr Val						
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acc tcc ttc ctc acc gtc gtc atc ctc ggc gtc ggc ctc aac gcg aag						894
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ccc gac ctt aca atc gag acg tgg gcg cac cag aag gcg ctc gag cgc						942
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Leu Gln Gln Gln Glu Leu Ala Ala Ala Asp Thr Gln Ala Glu						
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Glu Asn Glu Lys Pro Ser Leu Val Ala Ala Gly Gly Lys Gln Asp Arg
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Gly Ala Phe His Pro Gly Glu Leu Val Glu Trp Arg Ala Pro Val Lys
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Asp Glu Thr Pro Thr Leu Ser Thr Met Glu Asp Gln Phe Val Ile Leu
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Ser Leu Thr His Ile Ile Cys Gly Leu Arg Val Asp Ala Ser Asp Phe
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Tyr Val Glu Ala Pro Pro Thr Val Glu Val Phe Thr His Phe Tyr Ser
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Leu Tyr His Asn Arg Lys Gly Glu Thr Thr Thr Leu Gly Ala Val Tyr
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ttc cgg ctc agg gac agg atg aag aag aat tat cca ttg tac tac ttg    764
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Pro	Lys	Ser	Cys	Arg	Leu	Thr	Phe	Arg	Gly	Asp	Ile	Leu	Lys	Glu	Glu			
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Lys	Gln	Val	Gly	Gln	Ile	Met	Lys	Leu	Ser	Asn	Gln	Gly	Leu	Thr	Gly			
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Arg	Asp	Ser	Asp	Lys	Asp	Leu	Ser	Val	Glu	Asp	Ile	Glu	Ser	Lys	Leu			
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Gln	Gly	Pro	Ala	Pro	Glu	Glu	Ile	Leu	Asp	Ala	Thr	Thr	Asn	Ile	Ala			
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Thr	Ala	Val	Ser	Pro	Asn	Leu	Gly	Val	Glu	Gln	Lys	Ser	Ile	Glu	His			
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475 480 485	
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Cys Pro Pro Ala Ser Leu Ala Glu Gly Thr Gly Asn Gly Gly Leu Phe	
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500

505

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gatcactg cag ttt aag att gat cca caa gat ttt caa gat tca gaa cca 170  
 Gln Phe Lys Ile Asp Pro Gln Asp Phe Gln Asp Ser Glu Pro  
 1 5 10

gat att ctt gca aat tct gct tca tgc ata ata gaa cgg atc aaa gaa 218  
 Asp Ile Leu Ala Asn Ser Ala Ser Ser Ile Ile Glu Arg Ile Lys Glu  
 15 20 25 30

aac agt gat cag tgt gcc gcg gct ctc agg tgc ctc tgt cgc cgg aaa 266  
 Asn Ser Asp Gln Cys Ala Ala Ala Leu Arg Ser Leu Cys Arg Arg Lys  
 35 40 45

aag ggc ctc act gtc gag gag gca agc ttg att ggt gtt gac agc ctt 314  
 Lys Gly Leu Thr Val Glu Glu Ala Ser Leu Ile Gly Val Asp Ser Leu  
 50 55 60

ggt att gat gta aga gcc ttt tct ggc ttg gaa gtt aag act gtt cga 362  
 Gly Ile Asp Val Arg Ala Phe Ser Gly Leu Glu Val Lys Thr Val Arg  
 65 70 75

ttt tca ttc aat gca cag gcg ctc tct gaa cgt tca gct gaa aag aag 410  
 Phe Ser Phe Asn Ala Gln Ala Leu Ser Glu Arg Ser Ala Glu Lys Lys  
 80 85 90

atc agg cga atg ctt ttc ccc cgt taccagcgta aaaacgtgaa agcctctact 464  
 Ile Arg Arg Met Leu Phe Pro Arg  
 95 100

gaagatgagt cttaacctat cagctgtttt tcttgagaaa gcatgcaaac acctggttca 524

aagacaaggt gtcaagggaa tcaacacaat atcatcttat gcgagtttgc taggagatag 584

cgcacaacct gtcgactatg agaatgacca aaaacatcag agtaataagg tttgccatgc 644

atggtctcta acatgcttcc aagaatatag tttggtttct gacagataat aaaaaaaaaa 704

cgaataaggt gccagttcat gtataaaaga tgaactgcga ctttatgctg gcggaaactg 764  
 attagctgac caagccttgt cagctacaaa ttcccagtaa taataacgag ctgcgaggtg 824  
 aaagggcaga gtaataaggt ctcgttggcc taaatcagtt cttagtttct tacccacaac 884  
 ctgtaactaa ctttgttgtc tcttttcatg tagacataaa tgtcatgcaa cgcaactgcg 944  
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aca gaa gca gct cct tgg agg cag cag gaa aga agt gcc acc aat atc 96  
 Thr Glu Ala Ala Pro Trp Arg Gln Gln Glu Arg Ser Ala Thr Asn Ile  
 20 25 30

tgt cga gaa gct gaa ggg agg cca aga att gca tct gtc tat gct gat 144  
 Cys Arg Glu Ala Glu Gly Arg Pro Arg Ile Ala Ser Val Tyr Ala Asp  
 35 40 45

ata gag aga agg gtt ggg ggc ttc gac ttt tta gag tgt aat aac aag 192  
 Ile Glu Arg Arg Val Gly Gly Phe Asp Phe Leu Glu Cys Asn Asn Lys  
 50 55 60

gac ttc agg gct ctc aga ata ttg ggt gca ttg aac gcg aga gat gct 240  
 Asp Phe Arg Ala Leu Arg Ile Leu Gly Ala Leu Asn Ala Arg Asp Ala  
 65 70 75 80

aag aac aag aat gac agc agt ggc aga cca atg gct act cac aga aca 288  
 Lys Asn Lys Asn Asp Ser Ser Gly Arg Pro Met Ala Thr His Arg Thr  
 85 90 95

gga tat gac cta acc acc tct gga agc ttc cag gct cct att gtg gtc 336  
 Gly Tyr Asp Leu Thr Thr Ser Gly Ser Phe Gln Ala Pro Ile Val Val  
 100 105 110

atg aag cct gca gga acc act gaa aag cat ggg gtt tca ctt gct tct 384  
 Met Lys Pro Ala Gly Thr Thr Glu Lys His Gly Val Ser Leu Ala Ser  
 115 120 125

gtt gcc ccc ata gca ggc cta aga agc ctt aga aag ttg cca gct aga 432  
 Val Ala Pro Ile Ala Gly Leu Arg Ser Leu Arg Lys Leu Pro Ala Arg



tca atg aac gaa gaa gac gca agt atc aaa gaa gtc atg gca tca gtc Ser Met Asn Glu Glu Asp Ala Ser Ile Lys Glu Val Met Ala Ser Val 370 375 380	1152
act gca aat aaa gat cac cag tat atc tat gag ata ctg ttg gca tct Thr Ala Asn Lys Asp His Gln Tyr Ile Tyr Glu Ile Leu Leu Ala Ser 385 390 395 400	1200
ggg ctt tta cac aaa gaa cat agt atc acg gca tta cct gct caa ctc Gly Leu Leu His Lys Glu His Ser Ile Thr Ala Leu Pro Ala Gln Leu 405 410 415	1248
caa cca tca aat tat cca atc aat ccg gag ctc ttc ctc att ctt gag Gln Pro Ser Asn Tyr Pro Ile Asn Pro Glu Leu Phe Leu Ile Leu Glu 420 425 430	1296
caa aca aaa cca gac tta gtt ttt gca ttc caa act gtc agt gga act Gln Thr Lys Pro Asp Leu Val Phe Ala Phe Gln Thr Val Ser Gly Thr 435 440 445	1344
aag aaa agt tgt aag cct tac acg ggg aag ctt cac cga aga ctt gtg Lys Lys Ser Cys Lys Pro Tyr Thr Gly Lys Leu His Arg Arg Leu Val 450 455 460	1392
ttt gac ctg gta aac gaa aca ata gct caa aag atg atc atc tgc aga Phe Asp Leu Val Asn Glu Thr Ile Ala Gln Lys Met Ile Ile Cys Arg 465 470 475 480	1440
tct gga agc cag cca gta aag ttt ctt caa tca agg aag ttg agt ggg Ser Gly Ser Gln Pro Val Lys Phe Leu Gln Ser Arg Lys Leu Ser Gly 485 490 495	1488
tgg caa cta ttc aag gat ttg tgc act gag gtt gac agg caa ata aaa Trp Gln Leu Phe Lys Asp Leu Cys Thr Glu Val Asp Arg Gln Ile Lys 500 505 510	1536
tgc acc ggg gag gag gag aat gga aac atg ata tta gat gag gat aca Cys Thr Gly Glu Glu Glu Asn Gly Asn Met Ile Leu Asp Glu Asp Thr 515 520 525	1584
gtc aat gga acg aaa gat tgg atg agc ttc gac act atg cta cat ggc Val Asn Gly Thr Lys Asp Trp Met Ser Phe Asp Thr Met Leu His Gly 530 535 540	1632
atg gtt tgg gag att gaa cga tcc atc ttc aag ggt ctt atc gac gag Met Val Trp Glu Ile Glu Arg Ser Ile Phe Lys Gly Leu Ile Asp Glu 545 550 555 560	1680
gtt atc ggc ggt gag act ata gag aag atg caa ttt ggg caa agg aaa Val Ile Gly Gly Glu Thr Ile Glu Lys Met Gln Phe Gly Gln Arg Lys 565 570 575	1728
ctg cag agg cag ctt tct ttc agt agt ata aac tga atacgcgtcg Leu Gln Arg Gln Leu Ser Phe Ser Ser Ile Asn 580 585	1774

tagtagtcat ttccatggag aagcttataa caactagtaa atgtgacagt ttcttttttt 1834  
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 1 5 10 15

att cac tgc ctg gca gtt caa atg ctg ctt ctg aga tgc ctg cta atg 96  
 Ile His Cys Leu Ala Val Gln Met Leu Leu Leu Arg Cys Leu Leu Met  
 20 25 30

gat ctt gat cga caa aac act gga aag gct aca gtg cta ggt gat gct 144  
 Asp Leu Asp Arg Gln Asn Thr Gly Lys Ala Thr Val Leu Gly Asp Ala  
 35 40 45

gcg cga gta ctg cga gat cta atc act caa gtg gaa tct ctc agg cag 192  
 Ala Arg Val Leu Arg Asp Leu Ile Thr Gln Val Glu Ser Leu Arg Gln  
 50 55 60

gaa caa tct gct ctt gta tcg gag cgc caa tat gtc agt tcc gag aag 240  
 Glu Gln Ser Ala Leu Val Ser Glu Arg Gln Tyr Val Ser Ser Glu Lys  
 65 70 75 80

aat gag ctg caa gag gag aac agt tcg ctc aag tcc caa ata tcg gaa 288  
 Asn Glu Leu Gln Glu Glu Asn Ser Ser Leu Lys Ser Gln Ile Ser Glu  
 85 90 95

cta caa acc gag ctc tgc gca agg atg agg agc agc agc ctg agc caa 336  
 Leu Gln Thr Glu Leu Cys Ala Arg Met Arg Ser Ser Ser Leu Ser Gln  
 100 105 110

acc agc atc ggg atg tcg gat ccg gca act cac cag cag atg cag atg 384  
 Thr Ser Ile Gly Met Ser Asp Pro Ala Thr His Gln Gln Met Gln Met  
 115 120 125

tgg agc agc att ccc cac tta agc tcc gtg gcc atg gcg gcg cgc cca 432  
 Trp Ser Ser Ile Pro His Leu Ser Ser Val Ala Met Ala Ala Arg Pro  
 130 135 140

gca agt gca gcg tcc ccg ttg cac ggc cag gag ggc tac tct gct gac 480  
 Ala Ser Ala Ala Ser Pro Leu His Gly Gln Glu Gly Tyr Ser Ala Asp  
 145 150 155 160



gca tat cat ttg gca gat cca act gat ggc aga att acc cta cat cta Ala Tyr His Leu Ala Asp Pro Thr Asp Gly Arg Ile Thr Leu His Leu 50 55 60	191
aag att tta aat ttg act gag ctg gaa ctc aac agg gtg gac atc cgt Lys Ile Leu Asn Leu Thr Glu Leu Glu Leu Asn Arg Val Asp Ile Arg 65 70 75	239
gtt ggc ctg tct gga gca ctg tat tat atg gat ggt ttc tct cgc act Val Gly Leu Ser Gly Ala Leu Tyr Tyr Met Asp Gly Phe Ser Arg Thr 80 85 90 95	287
gtt cgt cac ctt cgg aat ctt gtt tcc cag gat cca gtc caa agt agt Val Arg His Leu Arg Asn Leu Val Ser Gln Asp Pro Val Gln Ser Ser 100 105 110	335
gtg act gtt gga gtt tca cat ttt gag aga tgc tcg ctc tgg gtt caa Val Thr Val Gly Val Ser His Phe Glu Arg Cys Ser Leu Trp Val Gln 115 120 125	383
gtt ttg tat tac ccg ttt tat gga agt agt gga tca aca gac tat gaa Val Leu Tyr Tyr Pro Phe Tyr Gly Ser Ser Gly Ser Thr Asp Tyr Glu 130 135 140	431
gga gat tat gca gaa gag gat tca cag atg atg agg cag aag cgc tca Gly Asp Tyr Ala Glu Glu Asp Ser Gln Met Met Arg Gln Lys Arg Ser 145 150 155	479
cat cgg cct gaa ctt ggg gaa ccg gtt gtt ttg cgg tgc caa cca tac His Arg Pro Glu Leu Gly Glu Pro Val Val Leu Arg Cys Gln Pro Tyr 160 165 170 175	527
aag ttt cct ctc gct gag ctc ctc cta cca tta gag tgt tct cca gtt Lys Phe Pro Leu Ala Glu Leu Leu Leu Pro Leu Glu Cys Ser Pro Val 180 185 190	575
gag tat ttc cgg cta tgg cct agc cta cca gcc atg gtg gag tgc act Glu Tyr Phe Arg Leu Trp Pro Ser Leu Pro Ala Met Val Glu Cys Thr 195 200 205	623
ggc aca tac aca tat gaa ggc agt ggt ttc aag gcc acc gct gct cag Gly Thr Tyr Thr Tyr Glu Gly Ser Gly Phe Lys Ala Thr Ala Ala Gln 210 215 220	671
cag tat gac agc tct ccc ttc ctc agt gga ttg aag tcg att tct tct Gln Tyr Asp Ser Ser Pro Phe Leu Ser Gly Leu Lys Ser Ile Ser Ser 225 230 235	719
aag ccc ttc cat caa gtc tgc tca cat ttc atc cgg aca gta gct gga Lys Pro Phe His Gln Val Cys Ser His Phe Ile Arg Thr Val Ala Gly 240 245 250 255	767
ttc cag tta tgt tat gca gca aag aca tgg ttt ggt gga ttt gtg ggc Phe Gln Leu Cys Tyr Ala Ala Lys Thr Trp Phe Gly Gly Phe Val Gly 260 265 270	815

atg atg ata ttt ggg gca agt gaa gtc agc cgg aat gtt gat ttg ggt	863
Met Met Ile Phe Gly Ala Ser Glu Val Ser Arg Asn Val Asp Leu Gly	
275 280 285	
gat gag acc acc aca atg atc tgc aaa ttc gtc atg cgc gca tcc gat	911
Asp Glu Thr Thr Thr Met Ile Cys Lys Phe Val Met Arg Ala Ser Asp	
290 295 300	
gaa tcc atc acg aga gag atc aaa tcc gac ctc cag ggc tgg ctg gat	959
Glu Ser Ile Thr Arg Glu Ile Lys Ser Asp Leu Gln Gly Trp Leu Asp	
305 310 315	
gat atc acc gac ggc gct gtg gaa tac atg cct gag gat gag gtg aag	1007
Asp Ile Thr Asp Gly Ala Val Glu Tyr Met Pro Glu Asp Glu Val Lys	
320 325 330 335	
agt gtg gcc gcc gag cag ctg aag atc tcc atg gag agg att gcc ctg	1055
Ser Val Ala Ala Glu Gln Leu Lys Ile Ser Met Glu Arg Ile Ala Leu	
340 345 350	
ctc aag gca gcc agg cca aag gtc cca ccc gca aag acc gat caa gag	1103
Leu Lys Ala Ala Arg Pro Lys Val Pro Pro Ala Lys Thr Asp Gln Glu	
355 360 365	
gag gaa gag gag cga aag cag agc gag gaa cta gat ggg ttt gga aac	1151
Glu Glu Glu Glu Arg Lys Gln Ser Glu Glu Leu Asp Gly Phe Gly Asn	
370 375 380	
ccc aag ggc ccc tcg acg ctc tcc aag ctc acc gcg gag gag gct gag	1199
Pro Lys Gly Pro Ser Thr Leu Ser Lys Leu Thr Ala Glu Glu Ala Glu	
385 390 395	
cac cgc gct ctc cag gct gcc gtg ctt cag gag tgg cac cag cta tgc	1247
His Arg Ala Leu Gln Ala Ala Val Leu Gln Glu Trp His Gln Leu Cys	
400 405 410 415	
aaa gag aga gcc atg aaa gcg cag tga ggtcgatttg gaccgtgtgg	1294
Lys Glu Arg Ala Met Lys Ala Gln	
420	
atcttacgcg catgtataat tttgtatttt tccttcgtct cccattcttt gcgtgtctat	1354
actgctgggt tcaactactg tataccgctcg ccgatttggt cattgtattc tcaaatactt	1414
gtgcacgaaa aaacctgttt tgtaacatac tactgttagg gcgtttttta gcttcggtgt	1474
gaagatcgat tgtacaagag aatccaaatg tcattgttgc cttcccagtt ttatgaaaat	1534
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<213>	Zea mays

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1 5 10 15	
gct gga gct ggt ctc cct gtt cac atg aaa ggt gaa cta aac aca gct	96
Ala Gly Ala Gly Leu Pro Val His Met Lys Gly Glu Leu Asn Thr Ala	
20 25 30	
ttc ata gga ctg ggg gat gac ggt gga tat ggt ggt ggc tgg gtt cct	144
Phe Ile Gly Leu Gly Asp Asp Gly Gly Tyr Gly Gly Gly Trp Val Pro	
35 40 45	
ttg gca gct ctt aaa aag gtg ctg aga ggg atc cta aag tac ctc gga	192
Leu Ala Ala Leu Lys Lys Val Leu Arg Gly Ile Leu Lys Tyr Leu Gly	
50 55 60	
gtt cta tgg ttg ttt gca caa ttg cct gaa ctt ttg aaa gaa ata cta	240
Val Leu Trp Leu Phe Ala Gln Leu Pro Glu Leu Leu Lys Glu Ile Leu	
65 70 75 80	
gga tca atc tta aag gac aat gaa ggt gct ctc ttg aat ttg gat caa	288
Gly Ser Ile Leu Lys Asp Asn Glu Gly Ala Leu Leu Asn Leu Asp Gln	
85 90 95	
gag cag cct gca ctc cgg ttc tat gtc gga gga tat gta ttt gca gta	336
Glu Gln Pro Ala Leu Arg Phe Tyr Val Gly Gly Tyr Val Phe Ala Val	
100 105 110	
agt gtc cat cgg gtt caa ctg ctt cta caa gtt ttg agt gtg aaa aga	384
Ser Val His Arg Val Gln Leu Leu Leu Gln Val Leu Ser Val Lys Arg	
115 120 125	
ttt cac cac cag caa cag cag cag cag gct caa agc aat gct cag gaa	432
Phe His His Gln Gln Gln Gln Gln Ala Gln Ser Asn Ala Gln Glu	
130 135 140	
gag cta gca gca gtt gaa atc aat gaa ata tgt gac tac ttt agc aga	480
Glu Leu Ala Ala Val Glu Ile Asn Glu Ile Cys Asp Tyr Phe Ser Arg	
145 150 155 160	
cgt gtt gcc tcc gaa cca tat gat gct tct aga gtt gct tct ttt atc	528
Arg Val Ala Ser Glu Pro Tyr Asp Ala Ser Arg Val Ala Ser Phe Ile	
165 170 175	
act ttg ctt aca ttg cca att ttg gtt ctg cgc gag ttt tta aag ctg	576
Thr Leu Leu Thr Leu Pro Ile Leu Val Leu Arg Glu Phe Leu Lys Leu	
180 185 190	
att aca tgg aag aaa ggt ctt tcc ccg gtt cat ggg gac att gct act	624
Ile Thr Trp Lys Lys Gly Leu Ser Pro Val His Gly Asp Ile Ala Thr	



atctggtata tgtgttggtg tacatgatat attggcactg gacttgagac tgacgcattt 1576  
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cca ggt gaa act gca caa tgc atc gat gcc ccc aag aca ttc tgt gat 95  
Pro Gly Glu Thr Ala Gln Ser Ile Asp Ala Pro Lys Thr Phe Cys Asp  
20 25 30

tca ggg gag acg ggt aga cta tgt gga agt tca aca tgc ttt agt tgc 143  
Ser Gly Glu Thr Gly Arg Leu Cys Gly Ser Ser Thr Cys Phe Ser Cys  
35 40 45

aac aat ata cga gaa atg cag gct cag aaa gtc aga gga aca ctt ttg 191  
Asn Asn Ile Arg Glu Met Gln Ala Gln Lys Val Arg Gly Thr Leu Leu  
50 55 60

ata cca tgc cga aca gca atg aga gga agc ttc cca ctt aat ggg acg 239  
Ile Pro Cys Arg Thr Ala Met Arg Gly Ser Phe Pro Leu Asn Gly Thr  
65 70 75

tat ttt caa gtt aat gag gta ttt gct gac cat tgc tca agt caa aat 287  
Tyr Phe Gln Val Asn Glu Val Phe Ala Asp His Cys Ser Ser Gln Asn  
80 85 90 95

cca att gat gtc cca cga agt tgg att tgg gac ctc cca aga cga act 335  
Pro Ile Asp Val Pro Arg Ser Trp Ile Trp Asp Leu Pro Arg Arg Thr  
100 105 110

gtt tac ttt gga acc tca gtt cct aca ata ttc aga ggt tta acg act 383  
Val Tyr Phe Gly Thr Ser Val Pro Thr Ile Phe Arg Gly Leu Thr Thr  
115 120 125

gaa gag ata caa cga tgc ttt tgg aga gga ttt gtt tgc gtg agg ggc 431  
Glu Glu Ile Gln Arg Cys Phe Trp Arg Gly Phe Val Cys Val Arg Gly  
130 135 140

ttt gat agg aca gtg agg gca cca agg ccc ctt tat gca agg ttg cat 479  
Phe Asp Arg Thr Val Arg Ala Pro Arg Pro Leu Tyr Ala Arg Leu His  
145 150 155



caa	tct	ggg	agg	atg	tat	tac	ctc	aac	cgg	aag	acg	ctg	aag	aag	agc	335
Gln	Ser	Gly	Arg	Met	Tyr	Tyr	Leu	Asn	Arg	Lys	Thr	Leu	Lys	Lys	Ser	
				100					105				110			
tgg	gtc	aga	ccc	cag	gtg	cag	agc	gtg	aac	ctg	gac	ctc	aac	atc	tcc	383
Trp	Val	Arg	Pro	Gln	Val	Gln	Ser	Val	Asn	Leu	Asp	Leu	Asn	Ile	Ser	
				115					120				125			
acg	gct	gcc	gcc	atc	gac	aac	tgt	gcc	gcc	aac	ggg	gct	gct	gcc	gct	431
Thr	Ala	Ala	Ala	Ile	Asp	Asn	Cys	Ala	Ala	Asn	Gly	Ala	Ala	Ala	Ala	
				130					135				140			
gct	tcc	gac	gac	gag	gac	gag	cca	agg	aaa	ccc	gct	ggc	act	ttg	ttc	479
Ala	Ser	Asp	Asp	Glu	Asp	Glu	Pro	Arg	Lys	Pro	Ala	Gly	Thr	Leu	Phe	
				145					150				155			
tct	gga	ggc	agc	atg	gtg	gcc	gtg	ccg	tgc	gcc	aac	tgc	cat	ctc	cta	527
Ser	Gly	Gly	Ser	Met	Val	Ala	Val	Pro	Cys	Ala	Asn	Cys	His	Leu	Leu	
				160					165				170			
gtc	atg	ctg	tgc	aag	tcc	tcc	ccg	tcc	tgc	ccc	aac	tgc	aag	ttc	gtg	575
Val	Met	Leu	Cys	Lys	Ser	Ser	Pro	Ser	Cys	Pro	Asn	Cys	Lys	Phe	Val	
				180					185				190			
cag	cct	ctg	gca	cct	gct	gtg	ccg	cct	gcg	gcg	gtg	gcc	cat	tgg	agg	623
Gln	Pro	Leu	Ala	Pro	Ala	Val	Pro	Pro	Ala	Ala	Val	Ala	His	Trp	Arg	
				195					200				205			
atc	gat	gcc	gcc	gtc	aag	ccg	ctg	gag	acc	ctg	agc	ctt	ctc	cat	tag	671
Ile	Asp	Ala	Ala	Val	Lys	Pro	Leu	Glu	Thr	Leu	Ser	Leu	Leu	His		
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gcacatgcac ttcaccggca gcagattgta gaaaggaaat cgtagttacg tagtagtggt																731
gcatgggtta gtattactat tacctgggta atgcatgagc ggtcgaatga aaattggaaa																791
tgtgaaaacta ccgtgcatgc atgggtgacat gacaaaatac aaaatgggtga agccagcctc																851
aaattaaact gc																863

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Met Lys Leu Lys Asn Ser Ala Val Glu Thr Phe Lys Glu Asn Asn Met						
1 5 10 15						
att ttc act tct gaa gga aat ctc cac tct aaa aaa atg cga gaa gat	336					
Ile Phe Thr Ser Glu Gly Asn Leu His Ser Lys Lys Met Arg Glu Asp						
20 25 30						
tat gtt gct agt cca aac caa ccg ggt gct gtc cag aca aga tgc aaa	384					
Tyr Val Ala Ser Pro Asn Gln Pro Gly Ala Val Gln Thr Arg Cys Lys						
35 40 45						
tgg ata att gga gat gta act gag gtc ttt gat cgc agc aca tgg aag	432					
Trp Ile Ile Gly Asp Val Thr Glu Val Phe Asp Arg Ser Thr Trp Lys						
50 55 60						
ctt gga aag atc tta aag atg cta aag aac aac tac ttt gtt atc agg	480					
Leu Gly Lys Ile Leu Lys Met Leu Lys Asn Asn Tyr Phe Val Ile Arg						
65 70 75 80						
ctt gct gat tgc atc cag ctg aaa gag ttc cac ata tct agt ttg aga	528					
Leu Ala Asp Cys Ile Gln Leu Lys Glu Phe His Ile Ser Ser Leu Arg						
85 90 95						
atc cca cgt ggt ctg gaa gct cct caa agc aag ccc ttt cat gca gca	576					
Ile Pro Arg Gly Leu Glu Ala Pro Gln Ser Lys Pro Phe His Ala Ala						
100 105 110						
gat aag gcc acc gga cgc ggt aat cgt cga cct gct gat ggc gcc ttg	624					
Asp Lys Ala Thr Gly Arg Gly Asn Arg Arg Pro Ala Asp Gly Ala Leu						
115 120 125						
ccc ggc gca agg gct gcg gat caa atg ggt cac cga gcc tac gag ctg	672					
Pro Gly Ala Arg Ala Ala Asp Gln Met Gly His Arg Ala Tyr Glu Leu						
130 135 140						
ggg agc agc ggc aag aag cgg aaa gca acc gca gac gcc tct cac cat	720					
Gly Ser Ser Gly Lys Lys Arg Lys Ala Thr Ala Asp Ala Ser His His						
145 150 155 160						
cta ggc aga gca gca gca gca cac tcc cgg aag gtc gcc gca gcc tcc	768					
Leu Gly Arg Ala Ala Ala Ala His Ser Arg Lys Val Ala Ala Ala Ser						
165 170 175						
aac ccg aac ggc ggc agc tac ccg cac agc tct tca cag gcc ata gaa	816					
Asn Pro Asn Gly Gly Ser Tyr Pro His Ser Ser Ser Gln Ala Ile Glu						
180 185 190						
gac gcc gaa tgc tcg gtg gcc agc tgc agc gtg gac gac ctt tac cgc	864					
Asp Ala Glu Cys Ser Val Ala Ser Cys Ser Val Asp Asp Leu Tyr Arg						
195 200 205						
ctc ggc aat ggc ggc aac gcc aag cgt cgc ccc gcc gcc gca ggg tgc	912					
Leu Gly Asn Gly Gly Asn Ala Lys Arg Arg Pro Ala Ala Ala Gly Cys						

210	215	220	
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Leu Pro Asp Asp Ala Met Ser Ala Cys Pro Cys Thr Pro Gly Ala Arg			
225	230	235	240
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Asp Gly Glu Asp Asp Asp Ala Ala Gly Val His Gly Leu Glu Leu Glu			
	245	250	255
gcg tac ggg tcg act atg cgg gcg ctg tac gcg tcg ggg ccg ctg acg			1056
Ala Tyr Gly Ser Thr Met Arg Ala Leu Tyr Ala Ser Gly Pro Leu Thr			
	260	265	270
tgg gag cag gag gcg ctg ctg acg aac ctg cgc ctg tcg ctc aac atc			1104
Trp Glu Gln Glu Ala Leu Leu Thr Asn Leu Arg Leu Ser Leu Asn Ile			
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tcc aac gag gag cat ctg ctc cag ctc agg cgc cta ctg tcc tcg tga			1152
Ser Asn Glu Glu His Leu Leu Gln Leu Arg Arg Leu Leu Ser Ser			
	290	295	300
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cgtctccagc gtcgtcgtcg gccaacggcc atgcacgtcg gcttggctcg cggaacgccg			1272
cgttcagcga gcctcttgct tttactcttg ttgctaattg ctattacatg gttctctgtc			1332
tagtctaggt agaaagaatc ctatgttcat accagtgtcg agacatgtca tgccttttgt			1392
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tgg agt cat cgc cgc cgg gcc ggt cgc ggt cgg atc ccc ccg ctc cgc			96
Trp Ser His Arg Arg Arg Ala Gly Arg Gly Arg Ile Pro Pro Leu Arg			
	20	25	30
ctc ctc tcc ttc gat tcg ttg ctt ccc gct tca aat cca agc cac cac			144
Leu Leu Ser Phe Asp Ser Leu Leu Pro Ala Ser Asn Pro Ser His His			
	35	40	45
cct ttc ctt ccc atg gct tcc gac gcc ccg gcg gag caa ccg gcg acg			192

Pro	Phe	Leu	Pro	Met	Ala	Ser	Asp	Ala	Pro	Ala	Glu	Gln	Pro	Ala	Thr	
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cag	cag	aag	ccc	acc	agg	gtc	tcg	ctg	tcc	tat	gag	gag	atc	tcc	aag	240
Gln	Gln	Lys	Pro	Thr	Arg	Val	Ser	Leu	Ser	Tyr	Glu	Glu	Ile	Ser	Lys	
65					70					75					80	
ctc	ttc	toc	ctc	ccc	atc	gct	gag	gcg	gcc	tcc	atc	ctc	gga	gtc	tgc	288
Leu	Phe	Ser	Leu	Pro	Ile	Ala	Glu	Ala	Ala	Ser	Ile	Leu	Gly	Val	Cys	
				85					90					95		
acc	agt	gtc	ttg	aag	agg	atc	tgc	cgc	acc	cac	ggg	att	gtt	agg	tgg	336
Thr	Ser	Val	Leu	Lys	Arg	Ile	Cys	Arg	Thr	His	Gly	Ile	Val	Arg	Trp	
			100					105					110			
cca	tat	cgt	aag	ctt	gtt	tct	ggg	aaa	gct	ggg	gat	gac	aca	aaa	ggc	384
Pro	Tyr	Arg	Lys	Leu	Val	Ser	Gly	Lys	Ala	Gly	Asp	Asp	Thr	Lys	Gly	
		115					120					125				
cct	gat	agc	gac	aaa	gcc	aac	gaa	ctc	ctt	gag	gta	tca	aaa	atc	gcg	432
Pro	Asp	Ser	Asp	Lys	Ala	Asn	Glu	Leu	Leu	Glu	Val	Ser	Lys	Ile	Ala	
	130					135					140					
aaa	caa	aag	gct	ccc	agt	gca	tca	ggc	cca	tca	gta	gtg	tca	tca	agc	480
Lys	Gln	Lys	Ala	Pro	Ser	Ala	Ser	Gly	Pro	Ser	Val	Val	Ser	Ser	Ser	
145					150					155					160	
act	tcc	caa	gga	gcg	gca	aag	tct	caa	cag	ggc	aat	tct	aag	gca	gga	528
Thr	Ser	Gln	Gly	Ala	Ala	Lys	Ser	Gln	Gln	Gly	Asn	Ser	Lys	Ala	Gly	
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cag	ttt	tca	gtt	tcg	cca	cca	aca	ggc	aaa	cat	aac	gca	tca	cta	agt	576
Gln	Phe	Ser	Val	Ser	Pro	Pro	Thr	Gly	Lys	His	Asn	Ala	Ser	Leu	Ser	
			180					185					190			
ttg	acc	cat	agc	caa	gcc	aag	gcc	atc	cct	tgc	tat	atg	gat	gat	ttc	624
Leu	Thr	His	Ser	Gln	Ala	Lys	Ala	Ile	Pro	Cys	Tyr	Met	Asp	Asp	Phe	
		195					200					205				
aag	tac	gga	ttc	ccg	tca	tct	ggc	ttg	tct	tgt	gaa	act	atg	aaa	tgg	672
Lys	Tyr	Gly	Phe	Pro	Ser	Ser	Gly	Leu	Ser	Cys	Glu	Thr	Met	Lys	Trp	
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Trp	Gly	Thr	Ser	Ser	Asp	Thr	Asp	Tyr	Val	Pro	Thr	Lys	Asp	Gly	Ser	
	225				230					235					240	
cat	gaa	ccc	cat	gaa	tca	aca	aca	cat	gag	cca	tca	aag	ggc	atg	act	768
His	Glu	Pro	His	Glu	Ser	Thr	Thr	His	Glu	Pro	Ser	Lys	Gly	Met	Thr	
				245					250					255		
gat	gat	gac	gag	ttg	gac	tgg	gga	gca	gat	gaa	gcg	gaa	gct	gaa	gct	816
Asp	Asp	Asp	Glu	Leu	Asp	Trp	Gly	Ala	Asp	Glu	Ala	Glu	Ala	Glu	Ala	

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Arg Lys Ala Val Asp Asp Gly Arg Lys Leu Leu Asn Gly His Asn Arg			
290	295	300	
agg ggc caa gaa ttc tct agg ctg aac aaa agg cag aag aca gcg cta			960
Arg Gly Gln Glu Phe Ser Arg Leu Asn Lys Arg Gln Lys Thr Ala Leu			
305	310	315	320
gcc cag gta ttt ggg gct tca ctg cca gaa tgt tgt att act cgt gtc			1008
Ala Gln Val Phe Gly Ala Ser Leu Pro Glu Cys Cys Ile Thr Arg Val			
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gat gcc ctg ggg cga aaa ttt acc cgc ttt gga cat caa gcc aag gaa			95
Asp Ala Leu Gly Arg Lys Phe Thr Arg Phe Gly His Gln Ala Lys Glu			
20	25	30	
gac agg cag gcc gcc att ttc cgg tct gag aat ggg aac gta tgg cag			143
Asp Arg Gln Ala Ala Ile Phe Arg Ser Glu Asn Gly Asn Val Trp Gln			
35	40	45	
gta aaa atc ttt ggt gaa gac aag acg ggc aag cgg tca ggg cag tat			191
Val Lys Ile Phe Gly Glu Asp Lys Thr Gly Lys Arg Ser Gly Gln Tyr			
50	55	60	
cta gca ccg aca ggc ata ggg gac gtg ccc tat ctg cca aca att ccc			239
Leu Ala Pro Thr Gly Ile Gly Asp Val Pro Tyr Leu Pro Thr Ile Pro			
65	70	75	
cgc cgg atc att ttg gcg atc gcc gaa aag cat ggg gtc aaa cca ccg			287
Arg Arg Ile Ile Leu Ala Ile Ala Glu Lys His Gly Val Lys Pro Pro			
80	85	90	95
gaa gat ggt caa gat ttt tgg ccc tgg ttt gtg gat cat cct gag att			335

Glu Asp Gly Gln Asp Phe Trp Pro Trp Phe Val Asp His Pro Glu Ile	
100 105 110	
ccc ttg att gtg acg gaa ggg ggg aag aaa gct tta gcc gcc atc agc	383
Pro Leu Ile Val Thr Glu Gly Gly Lys Lys Ala Leu Ala Ala Ile Ser	
115 120 125	
caa ggt tac gtg gcc ctg agt ctc tat ggc tgt tta tgt ggc aac gat	431
Gln Gly Tyr Val Ala Leu Ser Leu Tyr Gly Cys Leu Cys Gly Asn Asp	
130 135 140	
ggg cta acc atc aaa ccg tca tta ttg ccc tat gtg cag ggg cga gaa	479
Gly Leu Thr Ile Lys Pro Ser Leu Leu Pro Tyr Val Gln Gly Arg Glu	
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Val Ala Ile Ala Tyr Asp Gln Asp Ala Lys Gly Ser Lys Gly Arg Lys	
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Ala Val Thr His Phe Leu Phe Met Arg Pro Gly Ser Val Leu Leu Gln	
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Val Val Pro Val Gly Leu Asp Trp Ala Ala Asp Ala Phe Tyr Gly Lys	
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ccc gcg cag cag ctc ggc ctc gag tac ctc gag tac aag gtg gcg ccc	240
Pro Ala Gln Gln Leu Gly Leu Glu Tyr Leu Glu Tyr Lys Val Ala Pro	

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Glu Glu Ser Ser Leu Ala Ala Glu Tyr Gly Leu Asp Ser Thr Val Leu				
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agg aac ccc tgg gtg atc agc agc cgc ggc tgg tgg gag atg aag aaa				336
Arg Asn Pro Trp Val Ile Ser Ser Arg Gly Trp Trp Glu Met Lys Lys				
	100	105	110	
gtg tac atg gac cgc cag aac gtc acc gtt aac atc aag cgg ttc ggc				384
Val Tyr Met Asp Arg Gln Asn Val Thr Val Asn Ile Lys Arg Phe Gly				
	115	120	125	
gag cta ctc agg acg gcg cgg acg cac ctc aag aac acc acg gcg tgc				432
Glu Leu Leu Arg Thr Ala Arg Thr His Leu Lys Asn Thr Thr Ala Cys				
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Ala Ala Ala Ala Ala Leu Arg				
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Pro Gln Ser Ser Glu Arg Pro Leu Thr Ala Thr Ser Ser Phe Ser Ser				
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Ala Ser Pro Phe Ser Glu Ser Ser Gln Leu Ala Ser Ser Ser Lys Gln				
	35	40	45	

cca gcc cca tat cta cct cgc aac cat atg ggc agg cgg tct ttc atg	191
Pro Ala Pro Tyr Leu Pro Arg Asn His Met Gly Arg Arg Ser Phe Met	
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Ser Lys Pro Val Tyr Pro Leu Val Phe Arg Asn Pro Val Ser Glu Ser	
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gaa gcg tgc agg atg ctt gag gtt ggt aat gcc ggg cga gcg aca cca	287
Glu Ala Cys Arg Met Leu Glu Val Gly Asn Ala Gly Arg Ala Thr Pro	
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agt gat gac agc caa gct tct cct ctg tgg cgt cgc agc ttg gcg agc	335
Ser Asp Asp Ser Gln Ala Ser Pro Leu Trp Arg Arg Ser Leu Ala Ser	
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Pro Asp Leu Lys Phe His Asn Ala Pro Asn Glu Leu Gly Lys Met Glu	
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Thr Ser Pro Glu Pro Asn Thr Ser Ser Arg Arg Glu Gly Phe Arg Trp	
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Ser Asn Ala Ser Ser Tyr Asp Phe Gly Tyr Asp Gly Asp Ala Ile Asp	
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Ile Ser Asp His Ile Ser Ile Glu Ser Gln Arg Ser Pro Thr Ser Ser	
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Ala Arg Phe Leu Lys Cys Gly Leu Cys Glu Arg Phe Leu His Gln Lys	
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Ser Pro Trp Thr Ser Asn Arg Ile Val Arg Asn Ala Asp Met Pro Val	
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Ala Ala Val Leu Pro Cys Arg His Val Phe His Ala Asp Cys Leu Glu	
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Glu Ser Thr Ala Lys Thr Glu Val His Glu Pro Pro Cys Pro Leu Cys	
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Ala Arg Ala Thr Asp Asp Glu Gly His Val Ser Phe Ser Glu Pro Leu	
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Leu Phe Arg Asn Arg Phe Lys Lys Gln Phe Pro Phe Lys Ala Arg Ile  
305 310 315

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Gly Lys Glu Leu Phe Gly Gly Arg Val Leu Asn Lys Val Gly Leu Ser  
320 325 330 335

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355

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Met  
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Ala Met Ala Met Ala Arg Phe Leu Ser Trp Leu Phe Thr Cys Phe Ala  
5 10 15

gct ctc gcc gtc ctg gag gcc acg gtc cct gct cgt tca tgg cgc gct 215  
Ala Leu Ala Val Leu Glu Ala Thr Val Pro Ala Arg Ser Trp Arg Ala  
20 25 30

ccg agt ccc acc ccg agg cac gaa gcg agg agg ttc gag cag aag acg	263
Pro Ser Pro Thr Pro Arg His Glu Ala Arg Arg Phe Glu Gln Lys Thr	
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gac agg ttc tgg gag tac cag gag cag agc aat acc tgg gta caa gta	311
Asp Arg Phe Trp Glu Tyr Gln Glu Gln Ser Asn Thr Trp Val Gln Val	
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Arg Ala Pro Phe Asp Leu Met Ser Cys Ile Asn Gly Thr Cys Thr Lys	
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Val Gly Ser Ile Gly Arg Leu Ala Arg Glu Pro Gly Arg His Gly Leu	
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Pro Pro Val Gln Ser Gln Glu Glu Glu Glu Glu Asp Thr Arg Arg Val	
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Gln Gly Asp Gly Ala Glu Glu Asp Pro Val Leu Pro Val Arg Arg Arg	
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Ile Ser Leu Thr Arg Met Ser Glu Ser Ser Val Trp Val Thr Gly Gln	
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Ser Gly Ser Ile Tyr Glu Arg Phe Trp Asn Gly Val Val Trp Val Ile	
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Ile Val Asn Thr Thr Ile Leu Ala Leu Ser Glu Ala Gly Thr Leu Tyr	
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Gln Leu Gln Leu Asn Glu His Ala Gln Pro Ile Trp Thr Glu Met Ala	
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230 235 240	
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gta Val 290	agt Ser	tcc Ser	act Thr	gga Gly	gac Asp 295	ctc Leu	tat Tyr	gag Glu	ttt Phe	gac Asp 300	aaa Lys	gaa Glu	aca Thr	aag Lys	cca Pro 305	1031
tca Ser	tgg Trp	aaa Lys	aag Lys	cat His 310	ata Ile	tgg Trp	agt Ser	gaa Glu	gaa Glu 315	ctg Leu	gcg Ala	aaa Lys	aat Asn	atc Ile	tca Ser 320	1079
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gat Asp 450	gat Asp	ggg Gly	agg Arg	ctt Leu	ggg Gly 455	gaa Glu	cta Leu	cat His	ttt Phe	cct Pro 460	ggg Gly	atg Met	ggg Gly	ggg Gly	act Thr 465	1511
gat Asp	ttt Phe	ggg Gly	ccg Pro	agt Ser	gcc Ala	caa Gln	agt Ser	acc Thr	ata Ile 475	aga Arg	aga Arg	aaa Lys	cta Leu	tca Ser	aac Asn 480	1559
aag	tac	gag	tgg	tcc	atc	cta	gac	gca	cca	gaa	aca	gaa	ggg	tgg	aat	1607

Lys	Tyr	Glu	Trp	Ser	Ile	Leu	Asp	Ala	Pro	Glu	Thr	Glu	Gly	Trp	Asn		
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Ala	Glu	Tyr	Cys	Thr	Glu	Glu	His	Gly	Pro	Thr	Asn	Cys	Ile	Ser	Gly		
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gca	aag	aat	ata	gct	gca	gac	aca	gaa	tca	aat	gac	ttg	agc	aat	aac	1703	
Ala	Lys	Asn	Ile	Ala	Ala	Asp	Thr	Glu	Ser	Asn	Asp	Leu	Ser	Asn	Asn		
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cca	cct	tcc	agg	agg	cgt	aaa	gta	gaa	gag	aag	cag	cac	tac	cta	aat	1751	
Pro	Pro	Ser	Arg	Arg	Arg	Lys	Val	Glu	Glu	Lys	Gln	His	Tyr	Leu	Asn		
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gtt	aac	aga	tac	cag	cag	agt	gat	gaa	act	gaa	tca	tac	aac	ttt	cta	1799	
Val	Asn	Arg	Tyr	Gln	Gln	Ser	Asp	Glu	Thr	Glu	Ser	Tyr	Asn	Phe	Leu		
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tca	agg	acc	att	gat	ctt	aac	ttc	cac	atg	cgg	gtg	atg	cat	gca	gac	1847	
Ser	Arg	Thr	Ile	Asp	Leu	Asn	Phe	His	Met	Arg	Val	Met	His	Ala	Asp		
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aga	tcg	ctt	ttc	ctt	ata	gca	gac	aat	gga	ttg	act	ttt	gaa	tat	cta	1895	
Arg	Ser	Leu	Phe	Leu	Ile	Ala	Asp	Asn	Gly	Leu	Thr	Phe	Glu	Tyr	Leu		
		580					585					590					
aac	agc	aat	ggg	gtt	tgg	ttg	tgg	tta	aga	cat	gaa	cat	gtt	aca	gcc	1943	
Asn	Ser	Asn	Gly	Val	Trp	Leu	Trp	Leu	Arg	His	Glu	His	Val	Thr	Ala		
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atg	aaa	gga	aca	cta	gga	agc	tac	aat	ggc	agt	ttg	tat	ctt	gtc	gac	1991	
Met	Lys	Gly	Thr	Leu	Gly	Ser	Tyr	Asn	Gly	Ser	Leu	Tyr	Leu	Val	Asp		
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Val	His	Gly	Asn	Leu	His	Ile	Arg	Glu	Arg	Asn	Gly	Asp	Glu	Leu	Leu		
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tgg	att	aac	tgc	aca	gcg	atg	aag	aag	gga	aga	cag	gtt	gca	agt	ggg	2087	
Trp	Ile	Asn	Cys	Thr	Ala	Met	Lys	Lys	Gly	Arg	Gln	Val	Ala	Ser	Gly		
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tct	cca	tgg	gat	ggc	atc	cct	ggg	tta	ttg	cgc	aga	gtg	aca	aca	gat	2135	
Ser	Pro	Trp	Asp	Gly	Ile	Pro	Gly	Leu	Leu	Arg	Arg	Val	Thr	Thr	Asp		
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gat	gca	ctc	ttc	ttt	gtc	aac	aag	cga	ggc	agg	ctg	cta	cag	ttc	acg	2183	
Asp	Ala	Leu	Phe	Phe	Val	Asn	Lys	Arg	Gly	Arg	Leu	Leu	Gln	Phe	Thr		
		675				680					685						
gtt	gcg	ctg	cgg	aaa	ttc	aag	tgg	aag	gac	tgc	cac	agt	cct	cct	gac	2231	
Val	Ala	Leu	Arg	Lys	Phe	Lys	Trp	Lys	Asp	Cys	His	Ser	Pro	Pro	Asp		
		690			695				700						705		
acc	aag	att	gct	ttc	ata	gtg	gac	cag	gag	gtc	ttc	aga	aga	aac	atc	2279	
Thr	Lys	Ile	Ala	Phe	Ile	Val	Asp	Gln	Glu	Val	Phe	Arg	Arg	Asn	Ile		



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 Phe Gly His Pro Thr Asp Lys Gln Met Ile Glu Leu Asp Gln Ala Leu  
 20 25 30

tca cag tgg aat act gac ttt gac aag gtt cca gtg aca aaa atc gca 145  
 Ser Gln Trp Asn Thr Asp Phe Asp Lys Val Pro Val Thr Lys Ile Ala  
 35 40 45

ttt ggg cac ttc ccg ttg tct ttc tca gca tta aca gag tca gga aaa 193  
 Phe Gly His Phe Pro Leu Ser Phe Ser Ala Leu Thr Glu Ser Gly Lys  
 50 55 60

agt atc aag gat gtt ttt cta aag caa tca ttg gca gca tat ttg tgt 241  
 Ser Ile Lys Asp Val Phe Leu Lys Gln Ser Leu Ala Ala Tyr Leu Cys  
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ggg cat ctt cat aca agg ttc ggg aag aac ttg aaa cga tac tac cat 289  
 Gly His Leu His Thr Arg Phe Gly Lys Asn Leu Lys Arg Tyr Tyr His  
 85 90 95

cgg gca gtc cag gaa tca tca tta tca gag cat tac tac caa cat aac 337  
 Arg Ala Val Gln Glu Ser Ser Leu Ser Glu His Tyr Tyr Gln His Asn  
 100 105 110

atg cac caa gga gat gca ttc cag ggt aat aag gaa aac tgt tct gaa 385  
 Met His Gln Gly Asp Ala Phe Gln Gly Asn Lys Glu Asn Cys Ser Glu  
 115 120 125

gaa gct tct cat att gaa gag ttc tgg gaa tgg gag atg ggt gat tgg	433
Glu Ala Ser His Ile Glu Glu Phe Trp Glu Trp Glu Met Gly Asp Trp	
130 135 140	
aga aag agc aga agc atg agg ata cta gca att gat gat ggt tat gtt	481
Arg Lys Ser Arg Ser Met Arg Ile Leu Ala Ile Asp Asp Gly Tyr Val	
145 150 155 160	
tcc tat acc gat ata gat ttc aga tta ggt tca aag agc ata atc ata	529
Ser Tyr Thr Asp Ile Asp Phe Arg Leu Gly Ser Lys Ser Ile Ile Ile	
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Leu Pro Thr Phe Pro Leu Asp Ser Arg Phe Met Gln Arg Ala Ser Ala	
180 185 190	
ttt cgt gat ttt aaa tgt cat gtc atg ggg gca tca tct ttt gat acc	625
Phe Arg Asp Phe Lys Cys His Val Met Gly Ala Ser Ser Phe Asp Thr	
195 200 205	
gtg aga gct ctt gta ttc tct aaa cat gag ata ata tct gtt tct gta	673
Val Arg Ala Leu Val Phe Ser Lys His Glu Ile Ile Ser Val Ser Val	
210 215 220	
aaa ata tac gac tca agg cca gga act ctt gaa ata gtc ttt gac tct	721
Lys Ile Tyr Asp Ser Arg Pro Gly Thr Leu Glu Ile Val Phe Asp Ser	
225 230 235 240	
gaa atg aaa aga gtg gat tcc aat gaa act cga gga aat atg tat ttg	769
Glu Met Lys Arg Val Asp Ser Asn Glu Thr Arg Gly Asn Met Tyr Leu	
245 250 255	
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Ile Pro Trp Asn Trp Arg Ala Phe Glu Asp Ser Ser Pro Ser Arg Tyr	
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Trp Leu Gln Ile Glu Val Met Asp Ile Thr Gly Asp Thr Ser Val Ser	
275 280 285	
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Gln Leu Arg Pro Phe Ser Val Asn Gly Leu Pro Ala Arg Val Asn Trp	
290 295 300	
aca tgg aaa gag ttt ttt gtg att ggt att cag tgg gct tca ata tat	961
Thr Trp Lys Glu Phe Phe Val Ile Gly Ile Gln Trp Ala Ser Ile Tyr	
305 310 315 320	
cat cct gca ctg tgg tgt gcc ttt tct cta atc ttt tcg ttg ctt ctt	1009
His Pro Ala Leu Trp Cys Ala Phe Ser Leu Ile Phe Ser Leu Leu Leu	
325 330 335	
gta cca caa gtt tta gca gtg gta ttc aaa gat cgg ttc aca tat aaa	1057
Val Pro Gln Val Leu Ala Val Val Phe Lys Asp Arg Phe Thr Tyr Lys	
340 345 350	
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Gly	Gly	Phe	Ile	Cys	Cys	Phe	Val	Glu	Leu	Ser	Arg	Leu	Val	Leu	Val	
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tgg	tta	ttg	cta	ctg	tta	tat	gct	atc	tat	tta	gtt	ttt	ata	cct	tgg	1201
Trp	Leu	Leu	Leu	Leu	Leu	Tyr	Ala	Ile	Tyr	Leu	Val	Phe	Ile	Pro	Trp	
385						390					395				400	
tta	ttc	ggt	cac	cct	att	act	gaa	gat	ggt	agc	ctg	act	tac	atg	aca	1249
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cat	aaa	ggc	tgg	att	cta	aaa	gga	ccc	agt	agt	agc	aac	gaa	gta	gtc	1297
His	Lys	Gly	Trp	Ile	Leu	Lys	Gly	Pro	Ser	Ser	Ser	Asn	Glu	Val	Val	
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His	Ala	Gly	Ile	Pro	Asp	Val	Met	Val	Ile	Val	Leu	Pro	His	Leu	Cys	
		435					440					445				
ttt	gtg	tta	gta	ccc	acc	att	gtg	att	tta	gct	gcc	atg	gct	gct	gag	1393
Phe	Val	Leu	Val	Pro	Thr	Ile	Val	Ile	Leu	Ala	Ala	Met	Ala	Ala	Glu	
		450					455				460					
aga	aca	gca	tat	cga	gag	cat	tat	ctt	tct	cga	tca	gga	aag	aag	aaa	1441
Arg	Thr	Ala	Tyr	Arg	Glu	His	Tyr	Leu	Ser	Arg	Ser	Gly	Lys	Lys	Lys	
465						470				475					480	
gat	gac	tac	cgt	aag	agc	agg	aca	cag	ata	gaa	cat	gaa	aac	ttt	tgg	1489
Asp	Asp	Tyr	Arg	Lys	Ser	Arg	Thr	Gln	Ile	Glu	His	Glu	Asn	Phe	Trp	
				485					490					495		
aac	ggt	cgc	tgg	att	agc	aaa	ttt	ctg	tgt	ctt	ctc	tgc	gtg	gtg	gtt	1537
Asn	Gly	Arg	Trp	Ile	Ser	Lys	Phe	Leu	Cys	Leu	Leu	Cys	Val	Val	Val	
			500						505				510			
cta	tgc	aaa	cat	tgg	aag	ctt	tgc	aga	gcg	ctc	gtg	aag	gct	tat	gct	1585
Leu	Cys	Lys	His	Trp	Lys	Leu	Cys	Arg	Ala	Leu	Val	Lys	Ala	Tyr	Ala	
		515						520				525				
atg	aac	ccc	ttg	ctc	cat	gcg	cca	gta	ctt	ttc	ttc	ttc	gtt	cct	tta	1633
Met	Asn	Pro	Leu	Leu	His	Ala	Pro	Val	Leu	Phe	Phe	Phe	Val	Pro	Leu	
		530					535				540					
ctc	atg	gtg	ttt	gcc	atc	tac	aag	aca	cgg	tcc	att	tag	ctgttcggga			1682
Leu	Met	Val	Phe	Ala	Ile	Tyr	Lys	Thr	Arg	Ser	Ile					
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gttctgaaga	tgtgctgcac	tggaactgtcc	aataaatggt	gctccaactg	tgaagactga											1742
agactaaccc	acaactgaag	gtgtgctact	tcgattttctc	aattttctctc	tttcagagag											1802
cagatttggt	agattgttta	acaggcatat	atagctttca	gcattgcgct	ccgtataaat											1862

gagggactgc acggcatttc attagaatgg aatagttagg atttgacca aggaggaaga 1922  
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aactccacaa gatctagaac ctaagaacct gcagaggaga ggaagaggag cttggggagg 180  
ag atg gcc ggc gcc gag ggc gag agg tgg gtg ggg cta gca acg gac 227  
Met Ala Gly Ala Glu Gly Glu Arg Trp Val Gly Leu Ala Thr Asp  
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ttc tcg gag ggg agc cgg gcg gcg ctg cgg tgg gcg gcg gcc aac ctg 275  
Phe Ser Glu Gly Ser Arg Ala Ala Leu Arg Trp Ala Ala Ala Asn Leu  
20 25 30  
ctg cga gcc ggc gac cac ctg ctg ctg ctg cac gtc atc aag gag ccc 323  
Leu Arg Ala Gly Asp His Leu Leu Leu Leu His Val Ile Lys Glu Pro  
35 40 45  
gac tac gag cag agc gag gcc atc ctc tgg gaa tcc acc ggc tcc ccg 371  
Asp Tyr Glu Gln Ser Glu Ala Ile Leu Trp Glu Ser Thr Gly Ser Pro  
50 55 60  
ttg att ccc ctc tcg gaa ttc tct gac cct atc att gcg aag aaa tat 419  
Leu Ile Pro Leu Ser Glu Phe Ser Asp Pro Ile Ile Ala Lys Lys Tyr  
65 70 75  
gga gca aag ccg gac ata gaa acc ttg gac atc ctg aac act aca gct 467  
Gly Ala Lys Pro Asp Ile Glu Thr Leu Asp Ile Leu Asn Thr Thr Ala  
80 85 90 95  
acc cag aag gat atc gtg gtg gtt gtg aaa gtc ctg tgg ggt gat ccg 515  
Thr Gln Lys Asp Ile Val Val Val Val Lys Val Leu Trp Gly Asp Pro  
100 105 110  
cgt gag aag ctc tgt caa gtt atc cat gat acc ccg ctg agc tgc ttg 563

Arg	Glu	Lys	Leu	Cys	Gln	Val	Ile	His	Asp	Thr	Pro	Leu	Ser	Cys	Leu
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gtt	ata	gga	agc	agg	ggc	ctt	ggc	aag	ctc	aag	agg	gtg	ctc	ttg	gga
Val	Ile	Gly	Ser	Arg	Gly	Leu	Gly	Lys	Leu	Lys	Arg	Val	Leu	Leu	Gly
			130				135			140					
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Ser	Val	Ser	Asp	Tyr	Val	Val	Asn	Asn	Ala	Thr	Cys	Pro	Val	Thr	Val
			145				150			155					
gtc	aag	tca	aca	agc	acc	gaa	ggc	tga	tcttatcgcc	gagatgcctg					
Val	Lys	Ser	Thr	Ser	Thr	Glu	Gly								
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455															
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Ala	Leu	Glu	Trp	Gly	Ile	Thr	Asp	Leu	Tyr	Val	His	Val	Ala	Ile	Asn
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Asn Val Ala Gly Gln Lys Leu Tyr Lys Lys Cys Gly Phe Val Tyr Glu				
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Gly Glu Glu Pro Ala Trp Lys Gly Arg Phe Leu Gly Arg Pro Arg Arg				
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atg aac ggc ggg ctc cct gga ttc cac aat gcg ccg gcg tca aag gcc				226
Met Asn Gly Gly Leu Pro Gly Phe His Asn Ala Pro Ala Ser Lys Ala				
1 5 10 15				
gtg gtc gtc gcc gca ggt ctc ttc tcc gtc gcc ttt ggc ttc cgc ggc				274
Val Val Val Ala Ala Gly Leu Phe Ser Val Ala Phe Gly Phe Arg Gly				
20 25 30				
cac tcc ctc aac ctc ggc ctt gcc tac cag agt gtt tat gaa aag ctg				322
His Ser Leu Asn Leu Gly Leu Ala Tyr Gln Ser Val Tyr Glu Lys Leu				
35 40 45				
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Ser Val Trp Arg Leu Ile Thr Ser Phe Phe Ala Phe Ser Ser Thr Pro				
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Glu Leu Ile Phe Gly Ala Val Leu Leu Tyr Tyr Phe Arg Val Phe Glu				
65 70 75 80				
cga caa ata ggt tct aac aag tat gct gtc ttc att atc ttc tca acc				466
Arg Gln Ile Gly Ser Asn Lys Tyr Ala Val Phe Ile Ile Phe Ser Thr				
85 90 95				

atg gtg tcg gta ctg ctt cag atc ctt gct tta ggt tac atg aaa gat	514
Met Val Ser Val Leu Leu Gln Ile Leu Ala Leu Gly Tyr Met Lys Asp	
100 105 110	
cct tct cta aat cct ttg aca tca gga cca tat ggc ctc atc ttt gca	562
Pro Ser Leu Asn Pro Leu Thr Ser Gly Pro Tyr Gly Leu Ile Phe Ala	
115 120 125	
tct tat gtg cca ttc ttc ttt gac att cca atc tca atg aag ttt cgc	610
Ser Tyr Val Pro Phe Phe Phe Asp Ile Pro Ile Ser Met Lys Phe Arg	
130 135 140	
ata ttt gga ctg agc ttc agt gat aag tca ttt gta tat ttg gca gga	658
Ile Phe Gly Leu Ser Phe Ser Asp Lys Ser Phe Val Tyr Leu Ala Gly	
145 150 155 160	
ctc cag ctt ctt ttc tca tct gga aga cgt tcc att gta cct gga ctt	706
Leu Gln Leu Leu Phe Ser Ser Gly Arg Arg Ser Ile Val Pro Gly Leu	
165 170 175	
tct ggc ata ttg gct ggg ctt ctg tat cgc ctg aat aca ttt ggc gtc	754
Ser Gly Ile Leu Ala Gly Leu Leu Tyr Arg Leu Asn Thr Phe Gly Val	
180 185 190	
cgt agg ttg aag ttc cca gag ttc gca aca tcg ctc ttc tcg cag ttg	802
Arg Arg Leu Lys Phe Pro Glu Phe Ala Thr Ser Leu Phe Ser Gln Leu	
195 200 205	
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Ser Leu Pro Phe Ser Ser Asn Pro Tyr Gln Gly Leu Pro Ile Thr Glu	
210 215 220	
aat gat gga agc atc cct tct cat cag gca cgt caa att gag gat gca	898
Asn Asp Gly Ser Ile Pro Ser His Gln Ala Arg Gln Ile Glu Asp Ala	
225 230 235 240	
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Arg Thr Ala Thr Gln Asp Pro Thr Glu Ser Ser Ile Ala Ala Leu Val	
245 250 255	
tct atg ggc ttt gat cgc agt gca gca att cag gcg ctt gca ttg acc	994
Ser Met Gly Phe Asp Arg Ser Ala Ala Ile Gln Ala Leu Ala Leu Thr	
260 265 270	
aac tac gat gtc aat ttg gcg tcg aac att ctg ctt gaa gca caa gct	1042
Asn Tyr Asp Val Asn Leu Ala Ser Asn Ile Leu Leu Glu Ala Gln Ala	
275 280 285	
cta cag caa tga taccctggca tcgagtcaca aaagacgggc agatgctctg	1094
Leu Gln Gln	
290	
tacattaatg agcgtgaagt gtttgatact ccgattcatt cttctgttct agattttatc	1154
acagggtttcc ttgaaacaag ccaccgtata tgaacgtgaa ctatgggaac gaaagacaat	1214

tgatgcagga gctttctcta tttgcttgca gcgattctga atggtggttg actagtgaat 1274  
gtctggcagt gtgcattggc aatagtgttg gctttaaaga ttgccagcag attatggtgg 1334  
tttgtggata tgtagccaag tagccaattg gtgtcaggaa agaaaagttg ctataatcga 1394  
gaaagcgaaa ggttgatgtc aaacagctcg cactgatttt cctccagttc cccctttgt 1454  
ggcagagcga gaactttttt cattttt 1481

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<400> 38

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ctttatgtca gggcacaaat ctttcacctc ttcttctttc ttctgacca tttcagaagg 180  
aaccaccaaa aaatagaggc agaaggttct agaagccgcc aattcttttt tttttttttg 240  
gtttaatctg tctgagtccg agaggtttgt gattgtaaca atg gat tcc tcg tgt 295  
Met Asp Ser Ser Cys  
1 5  
gtc cca aac ggt gat gtt tcc ggg ttc aaa gat aag gag cca atg gtt 343  
Val Pro Asn Gly Asp Val Ser Gly Phe Lys Asp Lys Glu Pro Met Val  
10 15 20  
gac cct ttc ttg gtc gag gct ctt cag aac cct cgt cac cgt gtc acc 391  
Asp Pro Phe Leu Val Glu Ala Leu Gln Asn Pro Arg His Arg Val Thr  
25 30 35  
att ttg cgg atg gag ctg gat atc cag agg ttc ctg aat aat gca gat 439  
Ile Leu Arg Met Glu Leu Asp Ile Gln Arg Phe Leu Asn Asn Ala Asp  
40 45 50  
cag cag cat ttt gag ttt caa cat ttc cct tct tca tat ctc aga ctg 487  
Gln Gln His Phe Glu Phe Gln His Phe Pro Ser Ser Tyr Leu Arg Leu  
55 60 65  
gct gca cat cgt gtt gct caa cac tat ggt atg caa aca atg gtt caa 535  
Ala Ala His Arg Val Ala Gln His Tyr Gly Met Gln Thr Met Val Gln  
70 75 80 85  
gat aat ggc ttc aat ggc cag gga acc aga att atg gta aga aag ata 583  
Asp Asn Gly Phe Asn Gly Gln Gly Thr Arg Ile Met Val Arg Lys Ile  
90 95 100

gca Ala	gaa Glu	agc Ser	agg Arg	tat Tyr	cct Pro	gtg Val	gtt Val	tgc Cys	tta Leu	tct Ser	gaa Glu	ata Ile	cct Pro	gct Ala	aaa Lys	631	
			105			110						115					
cag Gln	ttg Leu	gaa Glu	gat Asp	gat Asp	aaa Lys	cct Pro	gag Glu	cag Gln	ata Ile	aaa Lys	att Ile	gcc Ala	ata Ile	agg Arg	ccc Pro	679	
			120			125						130					
agg Arg	caa Gln	aat Asn	aaa Lys	aac Asn	agt Ser	tta Leu	aat Asn	gaa Glu	gcc Ala	gga Gly	agg Arg	aaa Lys	agc Ser	aat Asn	cct Pro	727	
			135			140						145					
ctt Leu	aga Arg	agc Ser	gtg Val	gaa Glu	gag Glu	aga Arg	aag Lys	gag Glu	gaa Glu	tat Tyr	gat Asp	cgg Arg	gca Ala	cga Arg	gca Ala	775	
150						155						160			165		
cgc Arg	att Ile	ttt Phe	agt Ser	agc Ser	tcc Ser	aga Arg	agt Ser	tgt Cys	gac Asp	tca Ser	gat Asp	gat Asp	act Thr	ctg Leu	tcc Ser	823	
			170						175						180		
cag Gln	act Thr	ttt Phe	aca Thr	gat Asp	gag Glu	aaa Lys	aat Asn	tct Ser	ctt Leu	ata Ile	atc Ile	aag Lys	gat Asp	gag Glu	aat Asn	871	
			185						190						195		
gaa Glu	act Thr	agc Ser	aag Lys	acc Thr	cct Pro	gtg Val	gtt Val	gat Asp	tca Ser	gaa Glu	caa Gln	tgc Cys	act Thr	gtt Val	ggc Gly	919	
			200			205						210					
agg Arg	gat Asp	att Ile	agt Ser	tct Ser	act Thr	cga Arg	gtt Val	gcc Ala	att Ile	ttg Leu	aga Arg	gat Asp	agg Arg	gaa Glu	aag Lys	967	
			215			220						225					
gac Asp	cgt Arg	agt Ser	gat Asp	cca Pro	gat Asp	tat Tyr	gat Asp	cgt Arg	aac Asn	tat Tyr	gga Gly	aga Arg	tat Tyr	gct Ala	agg Arg	1015	
230						235						240			245		
agt Ser	att Ile	cca Pro	att Ile	tct Ser	tcc Ser	ctt Leu	aac Asn	ttg Leu	atg Met	cct Pro	ttt Phe	aat Asn	ttg Leu	caa Gln	caa Gln	1063	
			250						255						260		
gtt Val	caa Gln	cct Pro	cca Pro	ttt Phe	gtg Val	cag Gln	tat Tyr	gac Asp	aat Asn	gct Ala	tta Leu	atc Ile	cgt Arg	tca Ser	gtc Val	1111	
			265			270						275					
aga Arg	tat Tyr	cac His	aaa Lys	atc Ile	aag Lys	ctt Leu	cac His	ttg Leu	gct Ala	atg Met	gac Asp	ctc Leu	ctc Leu	caa Gln	gcc Ala	1159	
			280			285						290					
cta Leu	tga	tgaatccttt	tggtgtcacg	gggtcaaatc	aggtgtctag	ggatgggtgct										1215	
tatgtacagt			ggccaagtgc			tgcaatgatg			tatgcacatt			catatgacca			atttagacat		1275
gctgttttcc			aggctccgat			tgctcaacgc			ccattgagtt			tcgattattc			acagaattac		1335
tagatgacqt			ttagagggaa			gttttccatt			tggctgcaga			tgttatttta			gctattaagg		1395

atctcagagt aagatacaat ttttctgtac tggtataata gaccttggt ttctattctg 1455  
 gtttttaagt tttgatggtg gtagtaagca ttcggtatct cctagtgtgaaa tttttataact 1515  
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 Ala Arg Gly Ser Ala His Tyr Arg Thr Phe Trp Val Thr Asp Ser  
 1 5 10 15  
 cat tat tta aca gca acc ggg ccg gcg atc gcc ata ttt acc aac ccg 95  
 His Tyr Leu Thr Ala Thr Gly Pro Ala Ile Ala Ile Phe Thr Asn Pro  
 20 25 30  
 acc aaa caa ggc tat gac gac gga ctg ggc gaa aaa atc att ggc acg 143  
 Thr Lys Gln Gly Tyr Asp Asp Gly Leu Gly Glu Lys Ile Ile Gly Thr  
 35 40 45  
 ttt ggc aac tgt gct ggg gga aca acc ccc tgg ggg aca gtg tta agc 191  
 Phe Gly Asn Cys Ala Gly Gly Thr Thr Pro Trp Gly Thr Val Leu Ser  
 50 55 60  
 gca gag gaa aat ttc caa agc cag gtt cca gaa gca gtc tat gcc gat 239  
 Ala Glu Glu Asn Phe Gln Ser Gln Val Pro Glu Ala Val Tyr Ala Asp  
 65 70 75  
 ggc tcc gcc gta gat ccg gcc caa tgt ccg ctt aaa ata agt acc aac 287  
 Gly Ser Ala Val Asp Pro Ala Gln Cys Pro Leu Lys Ile Ser Thr Asn  
 80 85 90 95  
 ggg ttg agt ggc caa ggc aat gtg ttt ggc ttg gcg ggc aat aaa tat 335  
 Gly Leu Ser Gly Gln Gly Asn Val Phe Gly Leu Ala Gly Asn Lys Tyr  
 100 105 110  
 ggc tgg atg gta gaa att gac ccg gcc aat gcc aac gat tac ggc gtc 383  
 Gly Trp Met Val Glu Ile Asp Pro Ala Asn Ala Asn Asp Tyr Gly Val  
 115 120 125  
 aaa cat acg gcc ctt gga cgc ttt cgc cat gaa gct gtg gcg gtg cgg 431  
 Lys His Thr Ala Leu Gly Arg Phe Arg His Glu Ala Val Ala Val Arg  
 130 135 140



Asp	Ser	Ser	Tyr	Gly	Trp	Phe	Asp	Pro	Ser	Glu	Leu	Val	Pro	Phe	Glu		
				85					90					95			
gac	cac	ttc	acc	gag	aag	gcg	gcc	cag	ggc	ggc	agc	tcc	cgc	agc	agc		336
Asp	His	Phe	Thr	Glu	Lys	Ala	Ala	Gln	Gly	Gly	Ser	Ser	Arg	Ser	Ser		
			100					105					110				
ttt	gcc	gcc	gcc	gtg	gcc	gag	gcc	gtc	gac	gag	gta	gcc	cgc	cgc	agc		384
Phe	Ala	Ala	Ala	Val	Ala	Glu	Ala	Val	Asp	Glu	Val	Ala	Arg	Arg	Ser		
			115					120				125					
gcg	ctg	gcg	ctg	ctc	tgc	cct	tgc	gac	att	cct	gac	gcc	ttc	cgt	ccc		432
Ala	Leu	Ala	Leu	Leu	Cys	Pro	Cys	Asp	Ile	Pro	Asp	Ala	Phe	Arg	Pro		
			130					135				140					
cac	ccc	agc	gac	ggc	aac	ttc	ttc	ctg	gtc	gac	gtc	ccg	gca	ttc	gac		480
His	Pro	Ser	Asp	Gly	Asn	Phe	Phe	Leu	Val	Asp	Val	Pro	Ala	Phe	Asp		
					150					155					160		
acc	gac	gct	gac	tac	caa	ctc	gac	cag	atc	cgg	gcc	gca	cgg	cag	cga		528
Thr	Asp	Ala	Asp	Tyr	Gln	Leu	Asp	Gln	Ile	Arg	Ala	Ala	Arg	Gln	Arg		
				165					170					175			
ttc	gtg	ccg	cgg	aag	gcg	ctc	aac	tac	ctg	ctg	gac	gcc	gcc	gtg	act		576
Phe	Val	Pro	Arg	Lys	Ala	Leu	Asn	Tyr	Leu	Leu	Asp	Ala	Ala	Val	Thr		
				180					185				190				
cag	cga	gac	gcg	gcg	gaa	aaa	gcc	gcg	cgc	acc	gtg	cct	ggg	atg	gag		624
Gln	Arg	Asp	Ala	Ala	Glu	Lys	Ala	Ala	Arg	Thr	Val	Pro	Gly	Met	Glu		
							200					205					
atg	gcc	gcg	ctg	ttc	ttg	gcg	tac	cgc	cgc	gcg	gtg	ttt	tcg	ccg	ata		672
Met	Ala	Ala	Leu	Phe	Leu	Ala	Tyr	Arg	Arg	Ala	Val	Phe	Ser	Pro	Ile		
						215					220						
gac	aac	acc	tac	gcc	caa	gct	ttc	ggg	gtg	gat	cct	gag	ctg	gct	ctt		720
Asp	Asn	Thr	Tyr	Ala	Gln	Ala	Phe	Gly	Val	Asp	Pro	Glu	Leu	Ala	Leu		
					230					235					240		
gct	gcc	gag	cag	aaa	gcc	gcg	gca	gag	aga	gct	caa	cga	ggt	atc	aac		768
Ala	Ala	Glu	Gln	Lys	Ala	Ala	Ala	Glu	Arg	Ala	Gln	Arg	Gly	Ile	Asn		
				245					250					255			
aac	act	cac	atg	ctc	aat	tct	agc	tgt	act	ggt	ggt	ctt	ggt	act	gtg		816
Asn	Thr	His	Met	Leu	Asn	Ser	Ser	Cys	Thr	Val	Val	Leu	Val	Thr	Val		
				260				265					270				
tac	ttg	aaa	ttg	atg	ggt	aaa	caa	tgt	tcc	tac	tgc	ttt	tat	aga	tca		864
Tyr	Leu	Lys	Leu	Met	Gly	Lys	Gln	Cys	Ser	Tyr	Cys	Phe	Tyr	Arg	Ser		
				275				280					285				
agc	aac	aat	tat	ttt	gat	gtg	aat	aac	gga	gtg	gat	ctg	att	caa	ata		912
Ser	Asn	Asn	Tyr	Phe	Asp	Val	Asn	Asn	Gly	Val	Asp	Leu	Ile	Gln	Ile		
				290				295			300						
gtt	tct	att	tca	ctt	ctg	ttt	aac	tgt	tgg	ttg	cat	ttt	ttt	tat	caa		960
Val	Ser	Ile	Ser	Leu	Leu	Phe	Asn	Cys	Trp	Leu	His	Phe	Phe	Tyr	Gln		





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 <222> (2)..(778)

<400> 42

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His Ala Ser Asp Pro Thr Glu Phe Ile Leu Glu Thr Leu Glu Gln Ser	
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gat cca caa tca ttg ata caa tat ctt gct tac caa gat ttg tgt gtg	97
Asp Pro Gln Ser Leu Ile Gln Tyr Leu Ala Tyr Gln Asp Leu Cys Val	
20 25 30	
gta tct gag tgt aac ttg gaa ccg tgg cgc aga gct gct ttc ttt gag	145
Val Ser Glu Cys Asn Leu Glu Pro Trp Arg Arg Ala Ala Phe Phe Glu	
35 40 45	
gaa tct ggt gaa act tat aga aga att gtg aca gct tgt ttg aag cca	193
Glu Ser Gly Glu Thr Tyr Arg Arg Ile Val Thr Ala Cys Leu Lys Pro	
50 55 60	
ctt gag gag ttt act tca aaa att gct gaa gcc ctt gaa ggt ttt tct	241
Leu Glu Glu Phe Thr Ser Lys Ile Ala Glu Ala Leu Glu Gly Phe Ser	
65 70 75 80	
agt gat cag cca gaa ttg atg cta caa cag tcc aga ctc ttt agt gca	289
Ser Asp Gln Pro Glu Leu Met Leu Gln Gln Ser Arg Leu Phe Ser Ala	
85 90 95	
ttt gat gat tcc cag ata tgc aca tgg tgt gct agg aca ctg gct gga	337
Phe Asp Asp Ser Gln Ile Cys Thr Trp Cys Ala Arg Thr Leu Ala Gly	
100 105 110	
tta act gca cgc tca cgc aag gag gat cga tat ggt gtt gct caa ctg	385
Leu Thr Ala Arg Ser Arg Lys Glu Asp Arg Tyr Gly Val Ala Gln Leu	
115 120 125	
act ggc tgc aat gcc gct gtg atg aca aca ttg ctg tct gcc cta gta	433
Thr Gly Cys Asn Ala Ala Val Met Thr Thr Leu Leu Ser Ala Leu Val	
130 135 140	
gca atc gag aca tgt tta gga aag aaa aca aac cca cag cct gtg cgc	481
Ala Ile Glu Thr Cys Leu Gly Lys Lys Thr Asn Pro Gln Pro Val Arg	
145 150 155 160	
tca ctg gga cct gaa aac att agg tgg act aac ctc tcc aca gga cga	529
Ser Leu Gly Pro Glu Asn Ile Arg Trp Thr Asn Leu Ser Thr Gly Arg	
165 170 175	
aaa ggc aat gga gtt gca att gca agc aca caa aaa agt ggc ctg cac	577
Lys Gly Asn Gly Val Ala Ile Ala Ser Thr Gln Lys Ser Gly Leu His	
180 185 190	
aag aaa gct tat atc atg gca gat gtt ctt cgg act tct gtt tat cat	625
Lys Lys Ala Tyr Ile Met Ala Asp Val Leu Arg Thr Ser Val Tyr His	
195 200 205	

ata ctt tca gca ttc att gat gac ctg caa gct aat gca aaa cca tcc	673
Ile Leu Ser Ala Phe Ile Asp Asp Leu Gln Ala Asn Ala Lys Pro Ser	
210 215 220	
agc tta gag aag aac tgg atc agt gaa ggg aga aag cct gta tat ggt	721
Ser Leu Glu Lys Asn Trp Ile Ser Glu Gly Arg Lys Pro Val Tyr Gly	
225 230 235 240	
tca caa gcc gtg ttg gtt cag aag ttg att ctg ttt att gag tac cga	769
Ser Gln Ala Val Leu Val Gln Lys Leu Ile Leu Phe Ile Glu Tyr Arg	
245 250 255	
gct gta tga acttggttcc atgtctctca gatcctttgc ctgcacatca	818
Ala Val	
gatcatactt ggatggaagt gttttagttc tcgaacttgg ttgaagaacc tttgctttcc	878
accagagcct ataaagatgc atcgtaaact aacagtttca ccagagccta taaagatgca	938
tcgtaaacta acagtttctc aatatggact tctggcttct gtattcctgt gggctggtgc	998
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<222> (2) .. (868)	
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gcg gag gct gac gcg caa gcc ggt ggc gcg gag gca cag acc gag gtg	97
Ala Glu Ala Asp Ala Gln Ala Gly Gly Ala Glu Ala Gln Thr Glu Val	
20 25 30	
ctc ggc gcc ggc gag cct gat ctc gag agc aag atc gtg gcc atc agg	145
Leu Gly Ala Gly Glu Pro Asp Leu Glu Ser Lys Ile Val Ala Ile Arg	



gct ttc atc cgc aag agc ggc agc ggt ggg ctc ccg gcg agg cac cga 865  
 Ala Phe Ile Arg Lys Ser Gly Ser Gly Gly Leu Pro Ala Arg His Arg  
 275 280 285

tag cctaacctcc ttcgtcggct ggatatctgc gacacttgcg aagttgtgcc 918

ctagaaccgc aacgggaaag aaaaagaagc aaacggtttc ttgttctttt tttccctgta 978

ccttgactgc ctaggttttac ctccagtgtgta atattgtcag gtacataagg gtgaaatgat 1038

atgatgtttc tcgaggaaaa agaaagaaat tagtcactgt ttttgctatg gtttggttgc 1098

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at 1160

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 <212> PRT  
 <213> Zea mays

<400> 44

Phe Cys Glu Cys Ile Phe Val Val Leu Gln Gln Gln Gly Pro Asp Tyr  
 1 5 10 15

Met Val Arg Asn Ala Arg Arg Ser Met Leu Glu Glu Leu Glu Gly Met  
 20 25 30

Leu Glu Ile Val Glu Pro Gln Pro Pro Gly Lys Pro Arg Thr Leu Ser  
 35 40 45

Arg Arg Arg Phe Asp Leu Pro Glu Gly Val Ala Ile Glu Lys Glu  
 50 55 60

<210> 45  
 <211> 473  
 <212> PRT  
 <213> Zea mays

<400> 45

Met Ala Lys Thr Pro Ser Phe Ala Val Ala Ala Val Ala Gly Gly Arg  
 1 5 10 15

Gly Pro Val His Asn Arg Thr Gln Leu Leu Leu Leu Leu Val Ala  
 20 25 30

Val Ala Ala Ser Ala Ser Thr Ala Gly Phe Leu Leu Arg Gly Ala Leu  
 35 40 45

Arg Asp Pro Cys Asp Gly Arg Gly Asp Pro Ala Ala Leu Asn Thr Ala  
 50 55 60

Val	Ala	Ser	Gly	Ser	Pro	Leu	Gly	Phe	Met	Arg	Ser	Lys	Leu	Val	Leu	
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Leu	Val	Ser	His	Glu	Leu	Ser	Leu	Ser	Gly	Gly	Pro	Leu	Leu	Leu	Met	
			85						90					95		
Glu	Leu	Ala	Phe	Leu	Leu	Arg	His	Val	Gly	Ser	Gln	Val	Val	Trp	Ile	
		100						105					110			
Thr	Asn	Gln	Arg	Ser	Gln	Glu	Thr	Asn	Asp	Val	Thr	Tyr	Ser	Leu	Glu	
	115						120					125				
His	Arg	Met	Leu	Asn	His	Gly	Val	Gln	Val	Leu	Pro	Ala	Arg	Gly	Gln	
	130					135					140					
Glu	Ala	Val	Asp	Ile	Ala	Leu	Lys	Ala	Asp	Leu	Val	Ile	Leu	Asn	Thr	
145					150					155					160	
Ala	Val	Ala	Gly	Lys	Trp	Leu	Asp	Pro	Val	Leu	Lys	Asp	His	Val	Pro	
			165						170					175		
Lys	Val	Leu	Pro	Lys	Ile	Leu	Trp	Trp	Ile	His	Glu	Met	Arg	Gly	His	
		180						185					190			
Tyr	Phe	Lys	Val	Glu	Tyr	Val	Lys	His	Leu	Pro	Phe	Val	Ala	Gly	Ala	
	195						200					205				
Met	Ile	Asp	Ser	His	Thr	Thr	Ala	Glu	Tyr	Trp	Asn	Ser	Arg	Thr	Ser	
	210					215					220					
Asp	Arg	Leu	Lys	Ile	Gln	Met	Pro	Gln	Thr	Tyr	Val	Val	His	Leu	Gly	
225					230					235					240	
Asn	Ser	Lys	Glu	Leu	Met	Glu	Val	Ala	Glu	Asp	Asn	Val	Ala	Arg	Arg	
			245						250					255		
Val	Leu	Arg	Glu	His	Ile	Arg	Glu	Ser	Leu	Gly	Val	Arg	Ser	Glu	Asp	
			260					265					270			
Leu	Leu	Phe	Ala	Ile	Ile	Asn	Ser	Val	Ser	Arg	Gly	Lys	Gly	Gln	Asp	
		275					280					285				
Leu	Phe	Leu	Gln	Ala	Phe	Tyr	Gln	Ala	Leu	Gln	Leu	Ile	Gln	His	Glu	
	290					295					300					
Lys	Leu	Lys	Val	Pro	Arg	Ile	His	Ala	Val	Val	Val	Gly	Ser	Asp	Val	
305					310					315					320	
Asn	Ala	Gln	Thr	Lys	Phe	Glu	Thr	Gln	Leu	Arg	Asp	Phe	Val	Val	Lys	
			325						330					335		
Asn	Thr	Ile	His	Asp	Arg	Val	His	Phe	Val	Asn	Lys	Thr	Leu	Ala	Val	
		340						345					350			
Ala	Pro	Tyr	Leu	Ala	Ala	Ile	Asp	Val	Leu	Val	Gln	Asn	Ser	Gln	Gly	
		355					360					365				

Arg Gly Glu Cys Phe Gly Arg Ile Thr Ile Glu Ala Met Ala Phe Lys  
 370 375 380  
 Leu Pro Val Leu Gly Thr Ala Ala Gly Gly Thr Thr Glu Ile Val Leu  
 385 390 395 400  
 Asp Gly Ser Thr Gly Leu Leu His Pro Ala Gly Lys Glu Gly Val Ala  
 405 410 415  
 Pro Leu Ala Lys Asn Ile Val Arg Leu Ala Ser His Ala Glu Gln Arg  
 420 425 430  
 Val Ser Met Gly Glu Lys Gly Tyr Gly Arg Val Lys Glu Met Phe Met  
 435 440 445  
 Glu His His Met Ala Glu Arg Ile Ala Ala Val Leu Lys Asp Val Leu  
 450 455 460  
 Arg Lys Ser Gln Glu His Ser Arg Ser  
 465 470

<210> 46  
 <211> 400  
 <212> PRT  
 <213> Zea mays

<400> 46

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 Tyr Ser Ser Ser Ser Phe Gly Leu Ser Gly Ala Ser Tyr Ile Ser Ser  
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 Pro Met Arg Glu Thr Glu Gln Ser Lys Thr Ser Phe Asp Gln Phe Tyr  
 35 40 45  
 Ser Asn Ala Asn Phe Gln Leu Tyr Leu Ser Phe Cys Asn Phe Asp Lys  
 50 55 60  
 Ala Met Phe Leu Gly Phe Phe His Glu Leu Ser Glu Leu Pro Phe Glu  
 65 70 75 80  
 Leu Gln Arg Lys Ala Val Arg Asp Leu Lys Thr Ser Leu Ser Gly Glu  
 85 90 95  
 Asn Glu Ile Trp His Ser Met Val Tyr Asn Gly Phe Phe Glu Ala Phe  
 100 105 110  
 His Glu Phe Leu Lys Asn Asp Ser Gly Ile His Thr Leu Gln Ala Arg  
 115 120 125  
 Arg Ala Gly Ile Gln Phe Phe Leu Ala Phe Leu Ser Ser Gly Arg Ala  
 130 135 140  
 Arg Ile Pro Ser Val Cys Glu Asp Val Val Leu Leu Ile Ala Ser Leu

145	150	155	160
His Asp Ser Glu Phe Lys Gln Glu Ala Leu Leu Ile Val His Glu Leu	165	170	175
Leu Gln Glu Pro Ser Cys Pro Lys Ser Ser Leu Met Ala Ser Ile Leu	180	185	190
Ser Pro Ser Val Phe Gly Ala Leu Asp Ser Gly Glu Thr Lys Cys Leu	195	200	205
Asp Leu Ala Leu Gln Ile Ile Cys Lys Ile Ser Ser Asp Asn Asp Ile	210	215	220
Lys Ser Tyr Leu Leu Ser Ser Gly Ile Val Ser Arg Leu Ser Pro Leu	225	230	235
Leu Gly Glu Gly Lys Met Thr Glu Cys Ser Leu Lys Ile Leu Arg Asn	245	250	255
Leu Ser Asp Val Lys Glu Thr Ala Gly Phe Ile Ile Arg Thr Gly Asn	260	265	270
Cys Val Ser Ser Ile Ser Asp His Leu Asp Thr Gly Ser His Ser Glu	275	280	285
Arg Glu His Ala Val Val Ile Leu Leu Gly Val Cys Ser His Ser Pro	290	295	300
Glu Val Cys Ser Leu Ser Met Lys Glu Gly Val Ile Pro Ala Leu Val	305	310	315
Asp Leu Ser Val Ser Gly Thr Lys Val Ala Arg Asp Cys Ser Val Lys	325	330	335
Leu Leu Gln Leu Leu Arg Asn Phe Arg Arg Cys Asp Gln Phe Ser Ser	340	345	350
Ser Cys Ser Arg Glu Leu Ala Val Asp His Val Ser Glu Asn Thr Arg	355	360	365
Asn Gly Ser Ile Cys Met Gln Pro Ile Ser Lys Ser Ala Arg Tyr Ile	370	375	380
Ser Arg Lys Leu Asn Leu Phe Ser Lys Pro Arg Ser Leu Thr Leu Ala	385	390	395
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<210> 47  
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 <212> PRT  
 <213> Zea mays

<400> 47

Met Gly Gln Ile Glu Ser Gln Val Thr Pro Pro Ala Glu Glu Pro Ser

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1           5           10           15
Pro Pro Thr Val Glu Pro Ser Pro Ser Ser Pro Ala Pro Pro Pro Ser
          20          25          30
Ser Leu Glu Ala Ile Ala Ala Glu Ala Met Ser Phe Asp Glu Asp Asp
          35          40          45
Thr Glu Glu Ser Ile Asp Val Lys Val Gln Lys Ala Leu Asp Cys Pro
          50          55          60
Cys Val Ala Asp Leu Lys Asn Gly Pro Cys Gly Gly Gln Phe Val Asp
          65          70          75          80
Ala Phe Ser Cys Phe Leu Arg Ser Arg Glu Glu Glu Lys Gly Ser Asp
          85          90          95
Cys Val Lys Pro Phe Ile Thr Leu Gln Asp Cys Ile Lys Ala Asn Pro
          100          105          110
Glu Ala Phe Ser Lys Glu Ile Leu Glu Glu Glu Glu Asn Asp Glu Glu
          115          120          125
Ala Asp Lys Ser Asn Leu Lys Val Arg Ala Pro Ser Trp Ser Arg Glu
          130          135          140
Ser Lys Pro Lys Val
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<210>      48
<211>      45
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<213>      Zea mays

<400>      48

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Gly Gln Thr Arg Trp Glu Met Phe Asp Leu Leu Ser Ser Leu Pro Ser
1           5           10           15
Thr Ser Ser Ala Ser Ser Thr Thr Thr Val Ser Ser Thr Ala Ser Ser
          20          25          30
Gly Ala Pro Pro Pro Ser Arg Pro Asp Trp Met Leu Phe
          35          40          45

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<210>      49
<211>      217
<212>      PRT
<213>      Zea mays

<400>      49

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His Ala Ser Ala Ile Gly Arg Leu Ile Ser Pro Ser Ser Gly Cys Ser
1           5           10           15

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Gly Thr Ser Ser Pro Phe Pro Asp Pro Glu Met Gln Ala Ser Ser Arg  
 20 25 30  
 Ser Ala Leu Arg Leu Phe Pro Val Arg Glu Pro Pro Lys Ile Leu Asp  
 35 40 45  
 Gly Glu Gly Val Ala Thr Gln Lys Leu Ile Pro Arg His Met Arg Asn  
 50 55 60  
 Gly Gly Ser Leu Leu Asp Gly Gln Ile Ser Ala Ala Val Pro Val Val  
 65 70 75 80  
 Asp Phe Ser Ala Arg Leu Gln Pro Asn Glu His Ala Met Asp His Arg  
 85 90 95  
 Val Ser Phe Glu Leu Thr Val Glu Asp Val Ala Arg Cys Leu Glu Lys  
 100 105 110  
 Lys Thr Ala Ile Ser Gly Asp Ser Gly Thr Ala Ser Phe His Leu Ala  
 115 120 125  
 Pro Thr Gly Ser Gly Asp His His Arg Glu Ser Asn Glu Ala Arg Ala  
 130 135 140  
 Gly Leu Tyr Val Asp Glu Ser Tyr His Asp Leu Pro Glu Lys Ala Arg  
 145 150 155 160  
 Arg Ser Leu Ser Leu Arg Leu Ala Lys Glu Phe Asn Phe Asn Asn Val  
 165 170 175  
 Asp Val Gly Ser Val Glu Pro Ser Val Gly Ser Asp Trp Trp Ala Asn  
 180 185 190  
 Glu Lys Val Ala Gly Met Thr Thr Glu Pro Lys Lys Asn Trp Ser Phe  
 195 200 205  
 His Pro Val Val Gln Pro Gly Val Ser  
 210 215

<210> 50  
 <211> 198  
 <212> PRT  
 <213> Zea mays

<400> 50

Met Gly Lys Ala Lys Lys Gly Pro Lys Phe Ala Val Met Lys Lys Ile  
 1 5 10 15  
 Val Thr Ser Lys Ala Ile Lys Ser Tyr Lys Glu Glu Val Leu Asn Pro  
 20 25 30  
 Glu Lys Lys Asn Leu Met Lys Glu Lys Leu Pro Arg Asn Val Pro Thr  
 35 40 45  
 His Ser Ser Ala Leu Phe Phe Gln Tyr Asn Thr Ala Leu Gly Pro Pro

50	55	60
Tyr Arg Val Leu Val Asp Thr Asn Phe Ile Asn Phe Ser Ile Gln Asn		
65	70	75 80
Lys Leu Asp Leu Glu Lys Gly Met Met Asp Cys Leu Tyr Ala Lys Cys		
85	90	95
Thr Pro Cys Ile Thr Asp Cys Val Met Ala Glu Leu Glu Lys Leu Gly		
100	105	110
Gln Lys Tyr Arg Val Ala Leu Arg Ile Ala Lys Asp Pro Arg Phe Glu		
115	120	125
Arg Ile Leu Cys Thr His Lys Gly Thr Tyr Ala Asp Asp Cys Leu Val		
130	135	140
Glu Arg Val Thr Gln His Lys Cys Tyr Ile Val Ala Thr Cys Asp Arg		
145	150	155 160
Asp Leu Lys Arg Arg Ile Arg Lys Ile Pro Gly Val Pro Ile Met Tyr		
165	170	175
Ile Thr Lys Arg Lys Tyr Ser Ile Glu Arg Leu Pro Glu Ala Thr Ile		
180	185	190
Gly Gly Ala Pro Arg Ile		
195		

<210> 51  
 <211> 265  
 <212> PRT  
 <213> Glycine max  
 <400> 51

Met Ser Val Ile Asp Ile Leu Thr Arg Val Asp Ser Ile Cys Lys Lys		
1	5	10 15
Tyr Asp Lys Tyr Asp Val Gln Ser Gln Arg Asp Ser Asn Leu Ser Ser		
20	25	30
Asp Asp Ala Phe Ala Lys Leu Tyr Ala Ser Val Asp Ala Asp Ile Glu		
35	40	45
Ala Leu Leu Gln Lys Ala Asp Thr Ala Ser Lys Glu Lys Ser Lys Ala		
50	55	60
Ser Thr Val Ala Ile Asn Ala Glu Ile Arg Arg Thr Lys Ala Arg Leu		
65	70	75 80
Leu Glu Glu Val Pro Lys Leu Gln Lys Leu Ala Met Lys Lys Val Lys		
85	90	95
Gly Leu Ser Ser Gln Glu Phe Ala Ala Arg Asn Asp Leu Ala Leu Ala		
100	105	110

Leu Pro Asp Arg Ile Gln Ala Ile Pro Asp Gly Thr Pro Ala Ala Ser  
 115 120 125  
 Lys Gln Thr Gly Ser Trp Ala Ala Ser Ala Ser Arg Pro Gly Ile Lys  
 130 135 140  
 Phe Asp Thr Asp Gly Lys Phe Asp Asp Glu Tyr Phe Gln Gln Thr Glu  
 145 150 155 160  
 Glu Ser Ser Gly Phe Arg Lys Glu Tyr Glu Met Arg Lys Met Lys Gln  
 165 170 175  
 Asp Gln Gly Leu Asp Met Ile Ala Glu Gly Leu Asp Thr Leu Lys Asn  
 180 185 190  
 Met Ala His Asp Met Asn Glu Glu Leu Asp Arg Gln Val Pro Leu Met  
 195 200 205  
 Asp Glu Ile Asp Thr Lys Val Asp Arg Ala Ser Ser Asp Leu Lys Asn  
 210 215 220  
 Thr Asn Val Arg Leu Arg Asp Thr Val Asn Gln Leu Arg Ser Ser Arg  
 225 230 235 240  
 Asn Phe Cys Ile Asp Ile Val Leu Leu Ile Ile Ile Leu Gly Ile Ala  
 245 250 255  
 Ala Tyr Leu Tyr Asn Val Leu Lys Lys  
 260 265

<210> 52  
 <211> 107  
 <212> PRT  
 <213> Zea mays  
 <400> 52

His Ala Ser Gly Phe Leu Lys Cys Ala Ile Leu Thr Lys Pro Gln Ser  
 1 5 10 15  
 Tyr Gly Val Leu Leu Gln Leu Pro Ala Pro Gln Leu Glu Asn Ala Leu  
 20 25 30  
 Ser Lys Asn Pro Thr Leu Lys Thr Pro Leu Ala Glu His Ala Glu Gln  
 35 40 45  
 Pro Asn Ile Arg Ser Thr Leu Pro Arg Ser Thr Leu Val Val Leu Gly  
 50 55 60  
 Leu Ala Glu Asp Gln Pro Gln Gln Pro Ala Val Thr Gln Val Gln Ser  
 65 70 75 80  
 Ser Gln Asn Gln Ala Ala Glu Thr Ser Ser Ser Ala Ala Asp Thr Ala  
 85 90 95

Thr Glu Val Thr Gln Glu Ser Ser Gly Ala Ser  
 100 105

<210> 53  
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 <212> PRT  
 <213> Glycine max

<400> 53

Ile Arg Leu Glu Phe Glu Ser Leu Glu Ile Glu Met Ala Asn Glu Asn  
 1 5 10 15

Glu Pro Ala Lys Leu Leu Leu Pro Tyr Leu Gln Arg Ala Asp Glu Leu  
 20 25 30

Gln Lys His Glu Pro Leu Val Ala Tyr Tyr Cys Arg Leu Tyr Ala Met  
 35 40 45

Glu Arg Gly Leu Lys Ile Pro Gln Ser Glu Arg Thr Lys Thr Thr Asn  
 50 55 60

Ala Leu Leu Val Ser Leu Met Lys Gln Leu Glu Lys Asp Lys Lys Ser  
 65 70 75 80

Ile Gln Leu Gly Pro Glu Asp Asn Leu Tyr Leu Glu Gly Phe Ala Leu  
 85 90 95

Asn Val Phe Gly Lys Ala Asp Lys Gln Asp Arg Ala Gly Arg Ala Asp  
 100 105 110

Leu Thr Thr Ala Lys Thr Phe Tyr Ala Ala Ser Ile Phe Phe Glu Ile  
 115 120 125

Leu Asn Gln Phe Gly Ala Val Gln Pro Asp Leu Glu Gln Lys Gln Lys  
 130 135 140

Tyr Ala Val Trp Lys Ala Ala Glu Ile Arg Lys Ala Leu Lys Glu Gly  
 145 150 155 160

Arg Lys Pro Thr Ala Gly Pro Pro Asp Gly Asp Glu Asp Leu Ser Val  
 165 170 175

Pro Leu Ser Ser Ser Ser Asp Arg Tyr Asp Leu Gly Thr Thr Glu Asn  
 180 185 190

Thr Val Ser Ser Pro Gly Pro Glu Ser Asp Ser Ser Arg Ser Tyr His  
 195 200 205

Asn Pro Ala Asn Tyr Gln Asn Leu Pro Ser Ile His Pro Ala Ala Pro  
 210 215 220

Lys Phe His Asp Thr Val Asn Asp Gln His Ser Ala Asn Ile Pro Ser  
 225 230 235 240

Ser Met Pro Phe His Asp Arg Val Asp Asn Asn Lys His Ser Ser Val

245	250	255
Val Ser Pro Ser Ser His Ser Phe Thr Pro Gly Val Tyr Pro Ser Gln		
260	265	270
Asp Tyr His Ser Pro Pro Pro Ser Arg Asp Tyr His Ser Pro Pro Pro		
275	280	285
Ser Gln Asp Tyr His Ser Pro Pro Ser Ser Gln Asp Tyr His Pro Pro		
290	295	300
Pro Pro Ser Gln Asp Tyr His Pro Pro Pro Ser Gln Asp Tyr His Pro		
305	310	315
Pro Pro Ala Arg Ser Glu Gly Ser Tyr Ser Glu Leu Tyr Asn His Gln		
325	330	335
Gln Tyr Ser Pro Glu Asn Ser Gln His Leu Gly Pro Asn Tyr Pro Ser		
340	345	350
His Glu Thr Ser Ser Tyr Ser Tyr Pro His Phe Gln Ser Tyr Pro Ser		
355	360	365
Phe Thr Glu Ser Ser Leu Pro Ser Val Pro Ser Asn Tyr Thr His Tyr		
370	375	380
Gln Gly Ser Asp Val Ser Tyr Ser Ser Gln Ser Ala Pro Leu Thr Thr		
385	390	395
Asn His Ser Ser Ser Ala Gln His Ser Ser Arg Asn Glu Thr Val Glu		
405	410	415
Pro Lys Pro Thr Thr Thr Gln Ala Tyr Gln Tyr Asp Ser Asn Tyr Gln		
420	425	430
Pro Ala Pro Glu Lys Ile Ala Glu Ala His Lys Ala Ala Arg Phe Ala		
435	440	445
Val Gly Ala Leu Ala Phe Asp Asp Val Ser Val Ala Val Asp Phe Leu		
450	455	460
Lys Lys Ser Leu Glu Leu Leu Thr Asn Pro Ser Ala Gly Gln		
465	470	475

<210> 54  
 <211> 143  
 <212> PRT  
 <213> Zea mays  
 <400> 54

Met Glu Val Phe Gly Lys Ser Val Ile Ala Glu Pro Ser Asn Val Ile	
1 5 10 15	
Phe Leu Ser Ala Ile Leu Asn Thr Glu Gly Ser Asn Pro Ser His Lys	
20 25 30	

Cys Asp Lys Arg Cys Gln Ser Glu Arg Ile Leu Gly Asn Met Tyr Arg  
 35 40 45  
 Cys Lys Leu Thr Glu Thr Thr His Ile Cys Asp Lys Asn Cys Asn Gln  
 50 55 60  
 Arg Ile Leu Tyr Asp Asn His Asn Ser Leu Cys Arg Val Ser Gly Gln  
 65 70 75 80  
 Leu Phe Pro Leu Ser Pro Leu Glu Gln Gln Ala Val Arg Gly Ile Arg  
 85 90 95  
 Arg Lys His Glu Val Asp Ser Ser Glu Gly Cys Cys Phe Lys Arg Arg  
 100 105 110  
 Arg Gly Ala Gln Leu His Pro Ser Pro Phe Glu Arg Ser Tyr Ser Ala  
 115 120 125  
 Val Tyr Pro Ile Pro Ser Gln Val Gly Asp Gly Met Asp Met Ser  
 130 135 140

<210> 55  
 <211> 393  
 <212> PRT  
 <213> Zea mays

<400> 55

Met Lys Val Leu Val Leu Ala Val Leu Ala Leu Val Ala Ala Ala Ser  
 1 5 10 15  
 Ala Ala Gly Gln Gly Glu Glu Gly Gly Gly Pro Pro Leu Pro Phe Ala  
 20 25 30  
 Leu Gly Ala Ala Pro Ala Gly Cys Asp Val Ala Gln Gly Glu Trp Val  
 35 40 45  
 Arg Asp Asp Asp Ala Arg Pro Trp Tyr Gln Glu Trp Glu Cys Pro Tyr  
 50 55 60  
 Ile Gln Pro Gln Leu Thr Cys Gln Ala His Gly Arg Pro Asp Lys Ala  
 65 70 75 80  
 Tyr Gln Ser Trp Arg Trp Gln Pro Arg Gly Cys Ser Leu Pro Ser Phe  
 85 90 95  
 Asn Ala Thr Leu Met Leu Glu Met Leu Arg Gly Lys Arg Met Leu Phe  
 100 105 110  
 Val Gly Asp Ser Leu Asn Arg Gly Gln Tyr Val Ser Leu Leu Cys Leu  
 115 120 125  
 Leu His Arg Ala Ile Pro Asp Gly Ala Lys Ser Phe Glu Thr Val Asp  
 130 135 140

Ser Leu Ser Val Phe Arg Ala Lys Asn Tyr Asp Ala Thr Ile Glu Phe  
145 150 155 160

Tyr Trp Ala Pro Met Leu Ala Glu Ser Asn Ser Asp Asp Ala Val Val  
165 170 175

His Ser Ala Asp Asp Arg Leu Ile Arg Gly Ala Pro Met Asp Arg His  
180 185 190

Tyr Ser Phe Trp Lys Gly Ala Asp Val Leu Val Phe Asn Ser Tyr Leu  
195 200 205

Trp Trp Val Ala Gly Asp Lys Ile Gln Ile Leu Arg Gly Ala Asp Asn  
210 215 220

Asp Pro Ser Lys Asp Ile Val Glu Met Lys Ser Glu Glu Ala Tyr Arg  
225 230 235 240

Leu Val Leu His Gln Val Val Arg Trp Leu Glu Arg Asn Val Asp Pro  
245 250 255

Gly Lys Ser Arg Val Phe Phe Val Thr Ala Ser Pro Thr His Thr Asp  
260 265 270

Gly Arg Ala Trp Gly Asp Asp Asp Ala Glu Gly Ser Ser Asn Cys Tyr  
275 280 285

Asn Gln Thr Ser Pro Ile Ser Ala Ala Ser Ser Tyr Arg Gly Gly Thr  
290 295 300

Ser Arg Glu Met Leu Arg Ala Thr Glu Glu Val Leu Ala Thr Ser Arg  
305 310 315 320

Val Pro Val Gly Leu Val Asn Ile Thr Arg Leu Ser Glu Tyr Arg Arg  
325 330 335

Asp Ala His Thr Gln Thr Tyr Lys Lys Gln Trp Val Glu Pro Thr Ala  
340 345 350

Glu Gln Arg Ala Asp Pro Arg Ser Tyr Ala Asp Cys Thr His Trp Cys  
355 360 365

Leu Pro Gly Val Pro Asp Thr Trp Asn Glu Leu Leu Tyr Trp Lys Leu  
370 375 380

Phe Phe Pro Ser Asn Asp Gln Val Leu  
385 390

<210> 56  
<211> 109  
<212> PRT  
<213> Zea mays

<400> 56

Thr Arg Pro Cys Asn Ser Met Asn Met Gln Leu Ser Gln Leu Pro Leu

[illegible]

<400> 57

Gly Ala Val Thr Cys Ala Ala Leu Phe Ala Trp Phe Ser Ser Ala Arg  
145 150 155 160



Glu Glu Arg Cys Ile Phe Arg Leu Gln Pro Ser Trp Gly Phe Glu Lys  
 210 215 220

Leu Lys Glu Glu Ile Leu Lys Arg Phe Gly Ile Ala Arg Glu Val Tyr  
 225 230 235 240

Val Asp Leu Lys Tyr Leu Asp Asp Glu Ser Glu Trp Val Leu Leu Thr  
 245 250 255

Cys Asn Ala Asp Leu Leu Glu Cys Ile Asp Val Tyr Lys Ser Ser Ser  
 260 265 270

Thr Gln Thr Val Arg Ile Leu Val His Ser Ser Asp Gln  
 275 280 285

<210> 59  
 <211> 115  
 <212> PRT  
 <213> Zea mays

<400> 59

Met Arg Ala Met Ser Ser Ala Val Asn Gly Met Leu Arg Ala Arg Leu  
 1 5 10 15

Arg Gly Ala Ala Arg Val Arg Gly Gly Gly Gly Glu Gly Ala Gly Arg  
 20 25 30

Trp Thr Thr Pro Gly His Glu Glu Arg Pro Lys Gly Tyr Leu Phe Asn  
 35 40 45

Arg Pro Pro Pro Pro Pro Gly Glu Ser Arg Lys Trp Glu Asp Trp Glu  
 50 55 60

Leu Pro Cys Tyr Val Thr Ser Phe Leu Thr Val Val Ile Leu Gly Val  
 65 70 75 80

Gly Leu Asn Ala Lys Pro Asp Leu Thr Ile Glu Thr Trp Ala His Gln  
 85 90 95

Lys Ala Leu Glu Arg Leu Gln Gln Gln Glu Leu Ala Ala Ala Asp Thr  
 100 105 110

Gln Ala Glu  
 115

<210> 60  
 <211> 168  
 <212> PRT  
 <213> Glycine max

<400> 60

Ile Arg Leu Glu Gln Arg Pro Val Glu Gly Asn Ala Thr Met Lys Gln  
 1 5 10 15



Val	Asp	Ala	Ser	Asp	Phe	Leu	Val	Ser	Val	Leu	Glu	Tyr	Tyr	Arg	Leu
			100					105					110		
Glu	Trp	Ser	His	Leu	Thr	Pro	Asn	Ser	Ile	Thr	Ala	Leu	Ser	Ile	Phe
		115					120					125			
Ala	His	Leu	Cys	Glu	Ala	Tyr	Val	Glu	Ala	Pro	Pro	Thr	Val	Glu	Val
		130				135					140				
Phe	Thr	His	Phe	Tyr	Ser	Leu	Tyr	His	Asn	Arg	Lys	Gly	Glu	Thr	Thr
145					150					155					160
Thr	Leu	Gly	Ala	Val	Tyr	Phe	Arg	Leu	Arg	Asp	Arg	Met	Lys	Lys	Asn
				165					170					175	
Tyr	Pro	Leu	Tyr	Tyr	Leu	Arg	Ser	Ser	Gln	Phe	Met	Trp	Val	Ser	Leu
			180					185					190		
Trp	Phe	Tyr	Ala	Lys	Val	Pro	Lys	Ser	Cys	Arg	Leu	Thr	Phe	Arg	Gly
		195					200					205			
Asp	Ile	Leu	Lys	Glu	Glu	Asn	Asn	Trp	Asn	Trp	Lys	Asp	Leu	Leu	Pro
		210				215					220				
Leu	Ser	Cys	Glu	Gln	Met	Lys	Gln	Val	Gly	Gln	Ile	Met	Lys	Leu	Ser
225					230					235					240
Asn	Gln	Gly	Leu	Thr	Gly	Ala	Asp	Ile	Ile	His	Asp	Tyr	Leu	Lys	Arg
				245					250					255	
Arg	Ile	Ser	Pro	Leu	Arg	Arg	Arg	Met	His	Leu	Thr	Cys	Asn	Tyr	Ser
			260					265					270		
Gly	Leu	Ser	Asp	Pro	Thr	Arg	Asp	Ser	Asp	Lys	Asp	Leu	Ser	Val	Glu
		275					280					285			
Asp	Ile	Glu	Ser	Lys	Leu	Ser	Tyr	Leu	Leu	Asp	Leu	Lys	Arg	Met	Gly
		290				295					300				
Val	Lys	Gln	Pro	Thr	Gly	Arg	Leu	Val	Arg	Ala	Ser	Thr	Asn	Asp	Gln
305					310					315					320
Ala	Asn	Gln	Pro	Leu	Asp	Leu	Leu	Asn	Val	Cys	Ser	Thr	His	Glu	Ala
				325					330					335	
Lys	Lys	Glu	Ala	Gln	Pro	Gln	Val	Cys	Ala	Ser	Leu	Arg	Arg	Tyr	Thr
			340					345					350		
Arg	Gln	Ser	Ala	Gly	Pro	Arg	Lys	Val	Ala	Val	Pro	Pro	Pro	Leu	Lys
		355					360					365			
Ile	Asp	Pro	Pro	Pro	Thr	Gln	Gly	Pro	Ala	Pro	Glu	Glu	Ile	Leu	Asp
		370				375					380				
Ala	Thr	Thr	Asn	Ile	Ala	Thr	Ala	Val	Ser	Pro	Asn	Leu	Gly	Val	Glu
385				390						395					400



Asn Asp Leu Val Lys Leu Val Ser Ser Thr Leu Cys Gln Glu Lys Asp  
705 710 715 720

Ser Ala Ser

<210> 62  
<211> 342  
<212> PRT  
<213> Glycine max

<400> 62

Met Ser Glu Lys Ala Leu Arg Asp Leu Asn Thr Ile Leu Gly Thr Glu  
1 5 10 15

Arg Lys Asn Glu Asp Ser Ser Lys Ala Cys Leu Ser Lys Pro Ser Val  
20 25 30

Asp Asn Ala Val Glu Asn Ile Glu Glu Trp Gln Lys Lys Asn Asn Ser  
35 40 45

Pro Ser Leu Val Ser Pro Ala Val Asn Gly Asn Leu Ala Val Thr Ala  
50 55 60

Asn Ser Gly Ala Glu Val Val Asn Pro Glu Val Glu Tyr Ile Glu Ser  
65 70 75 80

Glu Asn Leu Asn Asp Val Asp Asp Ile Asp Thr Cys Leu Lys Thr Leu  
85 90 95

Leu Ala Gly Leu Asp Ser Lys Asp Trp Val Leu Val Cys Asp Thr Leu  
100 105 110

Asn Asn Val Arg Arg Leu Ser Ile Phe His Lys Glu Ala Met Leu Asp  
115 120 125

Met Leu Gly Asp Val Ile Thr Ser Ile Ala Lys Ser Leu Lys Ser Pro  
130 135 140

Arg Ser Ala Val Cys Lys Thr Ala Ile Met Thr Ser Ala Asp Ile Phe  
145 150 155 160

Ser Ala Tyr Asn Asp Leu Ile Ile Asp Ser Leu Asp Pro Leu Leu Val  
165 170 175

Gln Leu Leu Leu Lys Ser Ser Gln Asp Lys Arg Phe Val Cys Glu Ala  
180 185 190

Ala Glu Lys Ala Leu Ile Ser Met Thr Ile Trp Ile Ser Pro Ile Ser  
195 200 205

Leu Leu Pro Lys Leu Gln Pro Tyr Leu Lys Asn Lys Asn Pro Arg Ile  
210 215 220

Arg Ala Lys Ala Ser Met Cys Phe Ser Arg Ser Val Pro Gln Leu Gly  
225 230 235 240



His 145	Leu	Asn	Tyr	Ile	Ile 150	Glu	Leu	Ala	Ser	Ser 155	Lys	Arg	Tyr	Thr	Ala 160
Cys	Val	Arg	Gly	Leu 165	Ala	Ala	Val	Val	Leu 170	Gly	Ala	Cys	Ile	Leu 175	Tyr
Asn	Ala	Ser	His 180	Glu	Lys	Gly	Arg	Asp 185	Ala	Phe	Ala	Val	Ala 190	Asp	Ala
Ile	Ser	Gln 195	Lys	Ile	Gly	Leu	Thr 200	Thr	Tyr	Phe	Leu	Arg 205	Phe	Asp	Glu
Leu	Arg 210	Arg	Ser	Leu	Ala	His 215	Pro	Leu	Pro	Glu	Gln 220	His	His	Arg	Lys
Glu 225	Leu	Ser	Arg	Ser	Ser 230	Ala	Asn	Ser	Met	Ser 235	Asp	Phe	Gln	Glu	Ile 240
Glu	Glu	Asp	Glu	Thr 245	Asn	Lys	Asp	Asp	Gln 250	His	Pro	Val	Leu	Ser 255	Glu
Ile	Phe	Asp	Ser 260	Gln	Phe	Val	Asn	Phe 265	Leu	Ser	Lys	Leu	Glu 270	Ala	Asp
Ile	Arg	Glu 275	Asn	Ile	Met	Asp	Ile 280	Phe	Ser	Arg	Thr	Lys 285	Thr	Ala	Thr
Ala 290	Leu	Leu	Pro	Thr	Glu	Leu 295	Glu	Gln	Lys	Asn	Gly 300	Glu	Val	Asp	Gly
Glu 305	Tyr	Ile	Lys	Arg	Leu	Lys	Ser	Phe	Val	Glu 315	Lys	Gln	Cys	Asn	Glu 320
Met	Gln	Asp	Leu	Leu 325	Ala	Arg	Asn	Ala	Met 330	Leu	Ala	Glu	Glu	Leu 335	Val
Arg	Thr	Gly	Gly 340	Gly	Thr	Thr	Thr	Asp 345	Thr	Ser	Gln	Arg	Pro 350	Asn	Asn
Gly	Arg	Glu 355	Arg	Val	Gln	Ile	Glu 360	Ala	Leu	Arg	Gln	Glu 365	Leu	Glu	Gly
Ala 370	Arg	Arg	Gln	Ile	Glu	Ala 375	Leu	Glu	Thr	Asp	Lys 380	Ser	Gln	Ile	Glu
Ala 385	Glu	Ala	Asn	Asn	Gln 390	Arg	Asn	Leu	Ala	Val 395	Lys	Leu	Glu	Ser	Asp 400
Leu	Lys	Ser	Leu	Ser 405	Glu	Ala	Tyr	Asn	Ser 410	Ile	Glu	Gln	Ala	Asn 415	Tyr
Arg	Leu	Asp	Ala 420	Glu	Val	Lys	Thr	Leu 425	Arg	Gln	Gly	Gly 430	Ser	Val	Pro
Tyr	Pro	Asp 435	Val	Glu	Ala	Ile 440	Lys	Ala	Gln	Ala	Lys 445	Glu	Glu	Ala	Glu

Lys Asp Ser Glu Ala Glu Leu Asn Gly Leu Leu Val Cys Leu Gly Gln  
 450 455 460

Glu Gln Thr Lys Val Glu Lys Leu Ser Thr Arg Leu Ala Glu Leu Gly  
 465 470 475 480

Glu Asp Val Asp Ala Leu Leu Gln Gly Ile Gly Asp Asp Thr Ala Ile  
 485 490 495

Pro Asp Asp Asp Asp Asp Asp Asp Glu Asp Ser Glu Glu  
 500 505

<210> 64  
 <211> 102  
 <212> PRT  
 <213> Zea mays

<400> 64

Gln Phe Lys Ile Asp Pro Gln Asp Phe Gln Asp Ser Glu Pro Asp Ile  
 1 5 10 15

Leu Ala Asn Ser Ala Ser Ser Ile Ile Glu Arg Ile Lys Glu Asn Ser  
 20 25 30

Asp Gln Cys Ala Ala Ala Leu Arg Ser Leu Cys Arg Arg Lys Lys Gly  
 35 40 45

Leu Thr Val Glu Glu Ala Ser Leu Ile Gly Val Asp Ser Leu Gly Ile  
 50 55 60

Asp Val Arg Ala Phe Ser Gly Leu Glu Val Lys Thr Val Arg Phe Ser  
 65 70 75 80

Phe Asn Ala Gln Ala Leu Ser Glu Arg Ser Ala Glu Lys Lys Ile Arg  
 85 90 95

Arg Met Leu Phe Pro Arg  
 100

<210> 65  
 <211> 587  
 <212> PRT  
 <213> Zea mays

<400> 65

Pro Arg Val Arg Ser Val Leu Lys Thr Lys Pro Ser Pro Arg Ile Leu  
 1 5 10 15

Thr Glu Ala Ala Pro Trp Arg Gln Gln Glu Arg Ser Ala Thr Asn Ile  
 20 25 30

Cys Arg Glu Ala Glu Gly Arg Pro Arg Ile Ala Ser Val Tyr Ala Asp  
 35 40 45







Lys Ala Cys Ala Leu Thr Gly Ser Ser Asp Pro Cys Tyr Ile Glu Ala  
35 40 45

Tyr His Leu Ala Asp Pro Thr Asp Gly Arg Ile Thr Leu His Leu Lys  
50 55 60

Ile Leu Asn Leu Thr Glu Leu Glu Leu Asn Arg Val Asp Ile Arg Val  
65 70 75 80

Gly Leu Ser Gly Ala Leu Tyr Tyr Met Asp Gly Phe Ser Arg Thr Val  
85 90 95

Arg His Leu Arg Asn Leu Val Ser Gln Asp Pro Val Gln Ser Ser Val  
100 105 110

Thr Val Gly Val Ser His Phe Glu Arg Cys Ser Leu Trp Val Gln Val  
115 120 125

Leu Tyr Tyr Pro Phe Tyr Gly Ser Ser Gly Ser Thr Asp Tyr Glu Gly  
130 135 140

Asp Tyr Ala Glu Glu Asp Ser Gln Met Met Arg Gln Lys Arg Ser His  
145 150 155 160

Arg Pro Glu Leu Gly Glu Pro Val Val Leu Arg Cys Gln Pro Tyr Lys  
165 170 175

Phe Pro Leu Ala Glu Leu Leu Leu Pro Leu Glu Cys Ser Pro Val Glu  
180 185 190

Tyr Phe Arg Leu Trp Pro Ser Leu Pro Ala Met Val Glu Cys Thr Gly  
195 200 205

Thr Tyr Thr Tyr Glu Gly Ser Gly Phe Lys Ala Thr Ala Ala Gln Gln  
210 215 220

Tyr Asp Ser Ser Pro Phe Leu Ser Gly Leu Lys Ser Ile Ser Ser Lys  
225 230 235 240

Pro Phe His Gln Val Cys Ser His Phe Ile Arg Thr Val Ala Gly Phe  
245 250 255

Gln Leu Cys Tyr Ala Ala Lys Thr Trp Phe Gly Gly Phe Val Gly Met  
260 265 270

Met Ile Phe Gly Ala Ser Glu Val Ser Arg Asn Val Asp Leu Gly Asp  
275 280 285

Glu Thr Thr Thr Met Ile Cys Lys Phe Val Met Arg Ala Ser Asp Glu  
290 295 300

Ser Ile Thr Arg Glu Ile Lys Ser Asp Leu Gln Gly Trp Leu Asp Asp  
305 310 315 320

Ile Thr Asp Gly Ala Val Glu Tyr Met Pro Glu Asp Glu Val Lys Ser  
325 330 335

Val Ala Ala Glu Gln Leu Lys Ile Ser Met Glu Arg Ile Ala Leu Leu  
340 345 350

Lys Ala Ala Arg Pro Lys Val Pro Pro Ala Lys Thr Asp Gln Glu Glu  
355 360 365

Glu Glu Glu Arg Lys Gln Ser Glu Glu Leu Asp Gly Phe Gly Asn Pro  
370 375 380

Lys Gly Pro Ser Thr Leu Ser Lys Leu Thr Ala Glu Glu Ala Glu His  
385 390 395 400

Arg Ala Leu Gln Ala Ala Val Leu Gln Glu Trp His Gln Leu Cys Lys  
405 410 415

Glu Arg Ala Met Lys Ala Gln  
420

<210> 68  
<211> 371  
<212> PRT  
<213> Zea mays

<400> 68

Pro Arg Val Arg Ala Ser Gly Ile Ser Gly Thr Ser Val Arg Leu Thr  
1 5 10 15

Ala Gly Ala Gly Leu Pro Val His Met Lys Gly Glu Leu Asn Thr Ala  
20 25 30

Phe Ile Gly Leu Gly Asp Asp Gly Gly Tyr Gly Gly Gly Trp Val Pro  
35 40 45

Leu Ala Ala Leu Lys Lys Val Leu Arg Gly Ile Leu Lys Tyr Leu Gly  
50 55 60

Val Leu Trp Leu Phe Ala Gln Leu Pro Glu Leu Leu Lys Glu Ile Leu  
65 70 75 80

Gly Ser Ile Leu Lys Asp Asn Glu Gly Ala Leu Leu Asn Leu Asp Gln  
85 90 95

Glu Gln Pro Ala Leu Arg Phe Tyr Val Gly Gly Tyr Val Phe Ala Val  
100 105 110

Ser Val His Arg Val Gln Leu Leu Leu Gln Val Leu Ser Val Lys Arg  
115 120 125

Phe His His Gln Gln Gln Gln Gln Ala Gln Ser Asn Ala Gln Glu  
130 135 140

Glu Leu Ala Ala Val Glu Ile Asn Glu Ile Cys Asp Tyr Phe Ser Arg  
145 150 155 160

Arg Val Ala Ser Glu Pro Tyr Asp Ala Ser Arg Val Ala Ser Phe Ile  
 165 170 175  
 Thr Leu Leu Thr Leu Pro Ile Leu Val Leu Arg Glu Phe Leu Lys Leu  
 180 185 190  
 Ile Thr Trp Lys Lys Gly Leu Ser Pro Val His Gly Asp Ile Ala Thr  
 195 200 205  
 Ala Gln Arg Ala Arg Ile Glu Leu Cys Leu Glu Asn His Ser Gly Ser  
 210 215 220  
 Ala Ser Ser Asp Asn Thr Glu Asn Ser Ser Leu Ala Lys Ser Asn Ile  
 225 230 235 240  
 His His Asp Arg Ala His Ser Ser Val Glu Phe Ala Leu Thr Phe Val  
 245 250 255  
 Leu Asp His Ala Leu Ile Pro His Met Asn Val Ala Gly Gly Ala Ala  
 260 265 270  
 Trp Leu Pro Tyr Cys Val Ser Val Lys Leu Arg Tyr Ser Phe Gly Asp  
 275 280 285  
 Asn Asn His Ile Ala Phe Leu Ala Met Asn Gly Ser His Gly Gly Arg  
 290 295 300  
 Ala Cys Trp Leu Gln Phe Glu Glu Trp Glu Arg Cys Lys Gln Lys Val  
 305 310 315 320  
 Ser Arg Ala Val Glu Thr Val Asn Gly Ser Gly Val Ala Gly Glu Val  
 325 330 335  
 Gly Gln Gly Arg Leu Arg Met Val Ala Glu Met Ile Gln Lys Gln Leu  
 340 345 350  
 Gln Leu Cys Leu Gln Gln Leu Arg Asp Asp Pro Leu Ser Ala Gly Ser  
 355 360 365  
 Thr Ala Ser  
 370

<210> 69  
 <211> 178  
 <212> PRT  
 <213> Zea mays

<400> 69

Thr Arg Pro Asp Asp Pro Cys Pro Tyr Leu Leu Ser Ile Trp Thr Pro  
 1 5 10 15  
 Gly Glu Thr Ala Gln Ser Ile Asp Ala Pro Lys Thr Phe Cys Asp Ser  
 20 25 30  
 Gly Glu Thr Gly Arg Leu Cys Gly Ser Ser Thr Cys Phe Ser Cys Asn

35	40	45
Asn Ile Arg Glu Met Gln Ala Gln Lys Val Arg Gly Thr Leu Leu Ile		
50	55	60
Pro Cys Arg Thr Ala Met Arg Gly Ser Phe Pro Leu Asn Gly Thr Tyr		
65	70	75
Phe Gln Val Asn Glu Val Phe Ala Asp His Cys Ser Ser Gln Asn Pro		
	85	90
Ile Asp Val Pro Arg Ser Trp Ile Trp Asp Leu Pro Arg Arg Thr Val		
	100	105
Tyr Phe Gly Thr Ser Val Pro Thr Ile Phe Arg Gly Leu Thr Thr Glu		
	115	120
Glu Ile Gln Arg Cys Phe Trp Arg Gly Phe Val Cys Val Arg Gly Phe		
	130	135
Asp Arg Thr Val Arg Ala Pro Arg Pro Leu Tyr Ala Arg Leu His Phe		
	145	150
Pro Val Ser Lys Val Val Arg Gly Lys Lys Pro Gly Ala Ala Arg Ala		
	165	170
Glu Glu		
<210>	70	
<211>	222	
<212>	PRT	
<213>	Zea mays	
<400>	70	
Thr Arg Pro Leu Arg Val Lys Lys Leu Gln Gln Glu Ala Ala Arg Cys		
1	5	10
Leu Ser Leu His Lys Thr Met Glu Leu Gln Pro Glu Leu Ser Leu Gly		
	20	25
Pro Val Trp Pro Gly Phe Ala Ala Gly Asp Leu Ala Ala Lys Ser Ser		
	35	40
Ser Ser Glu Ser Asp Gly Thr Ser Arg Lys Lys Arg Lys His Tyr Thr		
	50	55
Ala Ser Trp Glu Glu Pro Gln Gln Pro Pro Ala Ser Leu Glu Leu Gln		
	65	70
Leu Asn Asp Pro Leu Pro Leu Asp Trp Glu Gln Cys Leu Asp Leu Gln		
	85	90
Ser Gly Arg Met Tyr Tyr Leu Asn Arg Lys Thr Leu Lys Lys Ser Trp		
	100	105
		110

Val Arg Pro Gln Val Gln Ser Val Asn Leu Asp Leu Asn Ile Ser Thr  
115 120 125

Ala Ala Ala Ile Asp Asn Cys Ala Ala Asn Gly Ala Ala Ala Ala Ala  
130 135 140

Ser Asp Asp Glu Asp Glu Pro Arg Lys Pro Ala Gly Thr Leu Phe Ser  
145 150 155 160

Gly Gly Ser Met Val Ala Val Pro Cys Ala Asn Cys His Leu Leu Val  
165 170 175

Met Leu Cys Lys Ser Ser Pro Ser Cys Pro Asn Cys Lys Phe Val Gln  
180 185 190

Pro Leu Ala Pro Ala Val Pro Pro Ala Ala Val Ala His Trp Arg Ile  
195 200 205

Asp Ala Ala Val Lys Pro Leu Glu Thr Leu Ser Leu Leu His  
210 215 220

<210> 71  
<211> 303  
<212> PRT  
<213> Zea mays

<400> 71

Met Lys Leu Lys Asn Ser Ala Val Glu Thr Phe Lys Glu Asn Asn Met  
1 5 10 15

Ile Phe Thr Ser Glu Gly Asn Leu His Ser Lys Lys Met Arg Glu Asp  
20 25 30

Tyr Val Ala Ser Pro Asn Gln Pro Gly Ala Val Gln Thr Arg Cys Lys  
35 40 45

Trp Ile Ile Gly Asp Val Thr Glu Val Phe Asp Arg Ser Thr Trp Lys  
50 55 60

Leu Gly Lys Ile Leu Lys Met Leu Lys Asn Asn Tyr Phe Val Ile Arg  
65 70 75 80

Leu Ala Asp Cys Ile Gln Leu Lys Glu Phe His Ile Ser Ser Leu Arg  
85 90 95

Ile Pro Arg Gly Leu Glu Ala Pro Gln Ser Lys Pro Phe His Ala Ala  
100 105 110

Asp Lys Ala Thr Gly Arg Gly Asn Arg Arg Pro Ala Asp Gly Ala Leu  
115 120 125

Pro Gly Ala Arg Ala Ala Asp Gln Met Gly His Arg Ala Tyr Glu Leu  
130 135 140

Gly Ser Ser Gly Lys Lys Arg Lys Ala Thr Ala Asp Ala Ser His His

145		150		155		160
Leu Gly Arg Ala	Ala Ala Ala His Ser Arg Lys Val Ala Ala Ala Ser	165	170	175		
Asn Pro Asn Gly Gly Ser Tyr Pro His Ser Ser Ser Gln Ala Ile Glu		180	185	190		
Asp Ala Glu Cys Ser Val Ala Ser Cys Ser Val Asp Asp Leu Tyr Arg		195	200	205		
Leu Gly Asn Gly Gly Asn Ala Lys Arg Arg Pro Ala Ala Ala Gly Cys		210	215	220		
Leu Pro Asp Asp Ala Met Ser Ala Cys Pro Cys Thr Pro Gly Ala Arg		225	230	235	240	
Asp Gly Glu Asp Asp Asp Ala Ala Gly Val His Gly Leu Glu Leu Glu		245	250	255		
Ala Tyr Gly Ser Thr Met Arg Ala Leu Tyr Ala Ser Gly Pro Leu Thr		260	265	270		
Trp Glu Gln Glu Ala Leu Leu Thr Asn Leu Arg Leu Ser Leu Asn Ile		275	280	285		
Ser Asn Glu Glu His Leu Leu Gln Leu Arg Arg Leu Leu Ser Ser		290	295	300		
<210>	72					
<211>	336					
<212>	PRT					
<213>	Zea mays					
<400>	72					
Pro Arg Val Arg Arg His Ala Arg His Glu His Asp Arg Ser Gly Asp		1	5	10	15	
Trp Ser His Arg Arg Arg Ala Gly Arg Gly Arg Ile Pro Pro Leu Arg		20	25	30		
Leu Leu Ser Phe Asp Ser Leu Leu Pro Ala Ser Asn Pro Ser His His		35	40	45		
Pro Phe Leu Pro Met Ala Ser Asp Ala Pro Ala Glu Gln Pro Ala Thr		50	55	60		
Gln Gln Lys Pro Thr Arg Val Ser Leu Ser Tyr Glu Glu Ile Ser Lys		65	70	75	80	
Leu Phe Ser Leu Pro Ile Ala Glu Ala Ala Ser Ile Leu Gly Val Cys		85	90	95		
Thr Ser Val Leu Lys Arg Ile Cys Arg Thr His Gly Ile Val Arg Trp		100	105	110		

Pro Tyr Arg Lys Leu Val Ser Gly Lys Ala Gly Asp Asp Thr Lys Gly  
115 120 125

Pro Asp Ser Asp Lys Ala Asn Glu Leu Leu Glu Val Ser Lys Ile Ala  
130 135 140

Lys Gln Lys Ala Pro Ser Ala Ser Gly Pro Ser Val Val Ser Ser Ser  
145 150 155 160

Thr Ser Gln Gly Ala Ala Lys Ser Gln Gln Gly Asn Ser Lys Ala Gly  
165 170 175

Gln Phe Ser Val Ser Pro Pro Thr Gly Lys His Asn Ala Ser Leu Ser  
180 185 190

Leu Thr His Ser Gln Ala Lys Ala Ile Pro Cys Tyr Met Asp Asp Phe  
195 200 205

Lys Tyr Gly Phe Pro Ser Ser Gly Leu Ser Cys Glu Thr Met Lys Trp  
210 215 220

Trp Gly Thr Ser Ser Asp Thr Asp Tyr Val Pro Thr Lys Asp Gly Ser  
225 230 235 240

His Glu Pro His Glu Ser Thr Thr His Glu Pro Ser Lys Gly Met Thr  
245 250 255

Asp Asp Asp Glu Leu Asp Trp Gly Ala Asp Glu Ala Glu Ala Glu Ala  
260 265 270

Asp Gly Thr Val Thr Ala Glu Ala Ser Ala Gln Leu Cys Ser Leu Arg  
275 280 285

Arg Lys Ala Val Asp Asp Gly Arg Lys Leu Leu Asn Gly His Asn Arg  
290 295 300

Arg Gly Gln Glu Phe Ser Arg Leu Asn Lys Arg Gln Lys Thr Ala Leu  
305 310 315 320

Ala Gln Val Phe Gly Ala Ser Leu Pro Glu Cys Cys Ile Thr Arg Val  
325 330 335

<210> 73  
<211> 196  
<212> PRT  
<213> Zea mays  
<400> 73

Glu Ile Asp Pro Ile Thr Lys Glu Val Leu Ala Thr Pro Ile Ala Asp  
1 5 10 15

Ala Leu Gly Arg Lys Phe Thr Arg Phe Gly His Gln Ala Lys Glu Asp  
20 25 30



Glu Glu Ser Ser Leu Ala Ala Glu Tyr Gly Leu Asp Ser Thr Val Leu  
85 90 95

Arg Asn Pro Trp Val Ile Ser Ser Arg Gly Trp Trp Glu Met Lys Lys  
100 105 110

Val Tyr Met Asp Arg Gln Asn Val Thr Val Asn Ile Lys Arg Phe Gly  
115 120 125

Glu Leu Leu Arg Thr Ala Arg Thr His Leu Lys Asn Thr Thr Ala Cys  
130 135 140

Ala Ala Ala Ala Ala Leu Arg  
145 150

<210> 75  
<211> 356  
<212> PRT  
<213> Zea mays

<400> 75

Thr Arg Pro Ile Glu Pro Gly Ser Arg Pro Glu Thr Ser Asp Tyr Pro  
1 5 10 15

Gln Ser Ser Glu Arg Pro Leu Thr Ala Thr Ser Ser Phe Ser Ser Ala  
20 25 30

Ser Pro Phe Ser Glu Ser Ser Gln Leu Ala Ser Ser Ser Lys Gln Pro  
35 40 45

Ala Pro Tyr Leu Pro Arg Asn His Met Gly Arg Arg Ser Phe Met Ser  
50 55 60

Lys Pro Val Tyr Pro Leu Val Phe Arg Asn Pro Val Ser Glu Ser Glu  
65 70 75 80

Ala Cys Arg Met Leu Glu Val Gly Asn Ala Gly Arg Ala Thr Pro Ser  
85 90 95

Asp Asp Ser Gln Ala Ser Pro Leu Trp Arg Arg Ser Leu Ala Ser Pro  
100 105 110

Asp Leu Lys Phe His Asn Ala Pro Asn Glu Leu Gly Lys Met Glu Thr  
115 120 125

Ser Pro Glu Pro Asn Thr Ser Ser Arg Arg Glu Gly Phe Arg Trp Ser  
130 135 140

Asn Ala Ser Ser Tyr Asp Phe Gly Tyr Asp Gly Asp Ala Ile Asp Ile  
145 150 155 160

Ser Asp His Ile Ser Ile Glu Ser Gln Arg Ser Pro Thr Ser Ser Ala  
165 170 175

Arg Phe Leu Lys Cys Gly Leu Cys Glu Arg Phe Leu His Gln Lys Ser

180	185	190
Pro Trp Thr Ser Asn Arg Ile Val Arg Asn Ala Asp Met Pro Val Ala		
195	200	205
Ala Val Leu Pro Cys Arg His Val Phe His Ala Asp Cys Leu Glu Glu		
210	215	220
Ser Thr Ala Lys Thr Glu Val His Glu Pro Pro Cys Pro Leu Cys Ala		
225	230	235
Arg Ala Thr Asp Asp Glu Gly His Val Ser Phe Ser Glu Pro Leu His		
245	250	255
Val Ala Leu Arg Ser Ala Arg Arg Asn Leu Ser Leu Gly Thr Gly Ala		
260	265	270
Gly Gly Asn Ser Gly Ile Ser Asp Pro Pro Arg Thr Asp Arg Gly Leu		
275	280	285
Lys Arg Asn Asn Ser Ala Val Met Pro Arg Arg Ser Gly Gly Ala Leu		
290	295	300
Phe Arg Asn Arg Phe Lys Lys Gln Phe Pro Phe Lys Ala Arg Ile Gly		
305	310	315
Lys Glu Leu Phe Gly Gly Arg Val Leu Asn Lys Val Gly Leu Ser Leu		
325	330	335
Ser Ser Gly Gln His Asp Asp His Arg Gln Gln Ala Pro Lys His Asp		
340	345	350
Arg Pro Met Lys		
355		

<210> 76  
 <211> 940  
 <212> PRT  
 <213> Zea mays

<400> 76

Met Ala Met Ala Met Ala Arg Phe Leu Ser Trp Leu Phe Thr Cys Phe	
1	15
Ala Ala Leu Ala Val Leu Glu Ala Thr Val Pro Ala Arg Ser Trp Arg	
20	30
Ala Pro Ser Pro Thr Pro Arg His Glu Ala Arg Arg Phe Glu Gln Lys	
35	45
Thr Asp Arg Phe Trp Glu Tyr Gln Glu Gln Ser Asn Thr Trp Val Gln	
50	60
Val Arg Ala Pro Phe Asp Leu Met Ser Cys Ile Asn Gly Thr Cys Thr	
65	80

Lys Val Gly Ser Ile Gly Arg Leu Ala Arg Glu Pro Gly Arg His Gly  
 85 90 95  
 Leu Pro Pro Val Gln Ser Gln Glu Glu Glu Glu Asp Thr Arg Arg  
 100 105 110  
 Val Gln Gly Asp Gly Ala Glu Glu Asp Pro Val Leu Pro Val Arg Arg  
 115 120 125  
 Arg Ile Ser Leu Thr Arg Met Ser Glu Ser Ser Val Trp Val Thr Gly  
 130 135 140  
 Gln Ser Gly Ser Ile Tyr Glu Arg Phe Trp Asn Gly Val Val Trp Val  
 145 150 155 160  
 Ile Ala Pro His Glu Leu Pro Ala Ser Ala Gly Tyr Ala Thr Ala Thr  
 165 170 175  
 Phe Ile Val Asn Thr Thr Ile Leu Ala Leu Ser Glu Ala Gly Thr Leu  
 180 185 190  
 Tyr Gln Leu Gln Leu Asn Glu His Ala Gln Pro Ile Trp Thr Glu Met  
 195 200 205  
 Ala Phe Asn Ser Ser Gln Gln Ser Ala Asn Leu Gly Leu Lys Thr Gln  
 210 215 220  
 Ser Gln Ala Met Arg Ile Arg Asn Gly Ile Val Ser Asn Asp Gly Arg  
 225 230 235 240  
 Lys Leu Phe Leu Ser Ile Met Asn Gly Ser Leu Leu Glu Val Thr Glu  
 245 250 255  
 Ile Gln Pro Leu Arg Trp Asn Tyr His Gly Arg Pro Pro Gly Ala Asp  
 260 265 270  
 Val Ser Tyr Ile Ser Asp Ala Gly Asn Leu Arg Pro Gly Thr Leu Phe  
 275 280 285  
 Thr Val Ser Ser Thr Gly Asp Leu Tyr Glu Phe Asp Lys Glu Thr Lys  
 290 295 300  
 Pro Ser Trp Lys Lys His Ile Trp Ser Glu Glu Leu Ala Lys Asn Ile  
 305 310 315 320  
 Ser Leu Lys Ser Ser Ala Gly Phe Ala Leu His Gly Leu Ser Gly Ser  
 325 330 335  
 Asn Ser Val Ser Leu Phe Leu Ile Ser Lys Asp Gly Leu Leu Val Glu  
 340 345 350  
 Arg Arg Leu His Arg Arg Lys Trp Lys Trp Asp Lys His Gly Ala Pro  
 355 360 365  
 Thr Gly Gln Arg Leu Ser Ser Ile Ala Glu Val Gln Lys Asp Glu Leu  
 370 375 380

Asn	Asp	Ala	Thr	Ser	Met	Phe	Leu	Thr	Thr	Thr	Thr	Gly	Lys	Val	Tyr	
385					390			395							400	
Glu	Tyr	Gln	Phe	Pro	Lys	Tyr	Thr	Gly	Gly	Ala	Gln	Ser	Asn	Lys	Ile	
					405			410							415	
Arg	Gly	Gln	Trp	Ile	Asn	His	Met	Ser	Pro	Glu	His	Ala	Lys	Val	Ala	
					420			425							430	
Arg	Asn	Val	Pro	Gly	Val	His	Val	Gln	Val	Gly	Arg	Met	Val	Phe	Pro	
					435			440							445	
Leu	Asp	Asp	Gly	Arg	Leu	Gly	Glu	Leu	His	Phe	Pro	Gly	Met	Gly	Gly	
					450			455							460	
Thr	Asp	Phe	Gly	Pro	Ser	Ala	Gln	Ser	Thr	Ile	Arg	Arg	Lys	Leu	Ser	
465					470			475							480	
Asn	Lys	Tyr	Glu	Trp	Ser	Ile	Leu	Asp	Ala	Pro	Glu	Thr	Glu	Gly	Trp	
					485			490							495	
Asn	Ala	Glu	Tyr	Cys	Thr	Glu	Glu	His	Gly	Pro	Thr	Asn	Cys	Ile	Ser	
					500			505							510	
Gly	Ala	Lys	Asn	Ile	Ala	Ala	Asp	Thr	Glu	Ser	Asn	Asp	Leu	Ser	Asn	
					515			520							525	
Asn	Pro	Pro	Ser	Arg	Arg	Arg	Lys	Val	Glu	Glu	Lys	Gln	His	Tyr	Leu	
					530			535							540	
Asn	Val	Asn	Arg	Tyr	Gln	Gln	Ser	Asp	Glu	Thr	Glu	Ser	Tyr	Asn	Phe	
545					550			555							560	
Leu	Ser	Arg	Thr	Ile	Asp	Leu	Asn	Phe	His	Met	Arg	Val	Met	His	Ala	
					565			570							575	
Asp	Arg	Ser	Leu	Phe	Leu	Ile	Ala	Asp	Asn	Gly	Leu	Thr	Phe	Glu	Tyr	
					580			585							590	
Leu	Asn	Ser	Asn	Gly	Val	Trp	Leu	Trp	Leu	Arg	His	Glu	His	Val	Thr	
					595			600							605	
Ala	Met	Lys	Gly	Thr	Leu	Gly	Ser	Tyr	Asn	Gly	Ser	Leu	Tyr	Leu	Val	
					610			615							620	
Asp	Val	His	Gly	Asn	Leu	His	Ile	Arg	Glu	Arg	Asn	Gly	Asp	Glu	Leu	
625					630			635							640	
Leu	Trp	Ile	Asn	Cys	Thr	Ala	Met	Lys	Lys	Gly	Arg	Gln	Val	Ala	Ser	
					645			650							655	
Gly	Ser	Pro	Trp	Asp	Gly	Ile	Pro	Gly	Leu	Leu	Arg	Arg	Val	Thr	Thr	
					660			665							670	
Asp	Asp	Ala	Leu	Phe	Phe	Val	Asn	Lys	Arg	Gly	Arg	Leu	Leu	Gln	Phe	
					675			680							685	

Thr Val Ala Leu Arg Lys Phe Lys Trp Lys Asp Cys His Ser Pro Pro  
 690 695 700  
 Asp Thr Lys Ile Ala Phe Ile Val Asp Gln Glu Val Phe Arg Arg Asn  
 705 710 715 720  
 Ile Ile Phe Val Val Gly Arg Asn Gly Arg Leu Tyr Gln Tyr Asn Arg  
 725 730 735  
 Ile Thr Glu Leu Trp His Arg His Tyr Gln Ser Pro His Leu Phe Leu  
 740 745 750  
 Ser Cys Ser Pro Gly Thr Ala Met Arg Pro Ser Pro Leu Ser Leu Ala  
 755 760 765  
 Gly Ser Leu Phe Met Val Ser Glu His Gly Gly Leu Val Glu Tyr His  
 770 775 780  
 Phe Ser Pro Gln Asp Gly Trp Glu Trp Val Glu His Gly Thr Pro His  
 785 790 795 800  
 Arg Gly Val Thr Leu Val Gly Ala Pro Gly Pro Cys Phe Asp Gly Ser  
 805 810 815  
 Gln Leu Phe Val Val Gly Ser Asp Gly His Val Tyr Arg Arg His Met  
 820 825 830  
 Glu Gly Arg Thr Trp Arg Trp Thr Ser His Gly His Pro Pro Ser Glu  
 835 840 845  
 Pro Ala Ala Val Asp Glu Gln Ser Cys Ala Thr Pro Asp Thr Gly Ala  
 850 855 860  
 Gly Ala His Tyr Ala Asp Gly Phe Arg Gly Ser Cys Asp Gly Lys Val  
 865 870 875 880  
 Ala Ala Val Arg Pro Val Pro Phe Ser Glu Asp Ala Val Val Phe Glu  
 885 890 895  
 Leu Arg Asp Gly Arg Leu Ala Glu Leu Arg Arg Pro Pro Ser Ala Asp  
 900 905 910  
 Gly Cys Gly Gly Trp Glu Trp Ala Arg Ile Ile Gly Thr Pro Ala Ser  
 915 920 925  
 Ala Cys Met Thr Ser Tyr Trp Thr Ala Val Ala Thr  
 930 935 940

<210> 77  
 <211> 556  
 <212> PRT  
 <213> Zea mays  
 <400> 77

His	Ala	Ser	Gly	Thr	Met	Glu	Ile	Gly	Leu	Arg	Gly	Pro	Thr	Asn	Leu	1	5	10	15
Phe	Gly	His	Pro	Thr	Asp	Lys	Gln	Met	Ile	Glu	Leu	Asp	Gln	Ala	Leu	20	25	30	
Ser	Gln	Trp	Asn	Thr	Asp	Phe	Asp	Lys	Val	Pro	Val	Thr	Lys	Ile	Ala	35	40	45	
Phe	Gly	His	Phe	Pro	Leu	Ser	Phe	Ser	Ala	Leu	Thr	Glu	Ser	Gly	Lys	50	55	60	
Ser	Ile	Lys	Asp	Val	Phe	Leu	Lys	Gln	Ser	Leu	Ala	Ala	Tyr	Leu	Cys	65	70	75	80
Gly	His	Leu	His	Thr	Arg	Phe	Gly	Lys	Asn	Leu	Lys	Arg	Tyr	Tyr	His	85	90	95	
Arg	Ala	Val	Gln	Glu	Ser	Ser	Leu	Ser	Glu	His	Tyr	Tyr	Gln	His	Asn	100	105	110	
Met	His	Gln	Gly	Asp	Ala	Phe	Gln	Gly	Asn	Lys	Glu	Asn	Cys	Ser	Glu	115	120	125	
Glu	Ala	Ser	His	Ile	Glu	Glu	Phe	Trp	Glu	Trp	Glu	Met	Gly	Asp	Trp	130	135	140	
Arg	Lys	Ser	Arg	Ser	Met	Arg	Ile	Leu	Ala	Ile	Asp	Asp	Gly	Tyr	Val	145	150	155	160
Ser	Tyr	Thr	Asp	Ile	Asp	Phe	Arg	Leu	Gly	Ser	Lys	Ser	Ile	Ile	Ile	165	170	175	
Leu	Pro	Thr	Phe	Pro	Leu	Asp	Ser	Arg	Phe	Met	Gln	Arg	Ala	Ser	Ala	180	185	190	
Phe	Arg	Asp	Phe	Lys	Cys	His	Val	Met	Gly	Ala	Ser	Ser	Phe	Asp	Thr	195	200	205	
Val	Arg	Ala	Leu	Val	Phe	Ser	Lys	His	Glu	Ile	Ile	Ser	Val	Ser	Val	210	215	220	
Lys	Ile	Tyr	Asp	Ser	Arg	Pro	Gly	Thr	Leu	Glu	Ile	Val	Phe	Asp	Ser	225	230	235	240
Glu	Met	Lys	Arg	Val	Asp	Ser	Asn	Glu	Thr	Arg	Gly	Asn	Met	Tyr	Leu	245	250	255	
Ile	Pro	Trp	Asn	Trp	Arg	Ala	Phe	Glu	Asp	Ser	Ser	Pro	Ser	Arg	Tyr	260	265	270	
Trp	Leu	Gln	Ile	Glu	Val	Met	Asp	Ile	Thr	Gly	Asp	Thr	Ser	Val	Ser	275	280	285	
Gln	Leu	Arg	Pro	Phe	Ser	Val	Asn	Gly	Leu	Pro	Ala	Arg	Val	Asn	Trp	290	295	300	





<210> 80  
 <211> 291  
 <212> PRT  
 <213> Zea mays

<400> 80

Met Asn Gly Gly Leu Pro Gly Phe His Asn Ala Pro Ala Ser Lys Ala  
 1 5 10 15

Val Val Val Ala Ala Gly Leu Phe Ser Val Ala Phe Gly Phe Arg Gly  
 20 25 30

His Ser Leu Asn Leu Gly Leu Ala Tyr Gln Ser Val Tyr Glu Lys Leu  
 35 40 45

Ser Val Trp Arg Leu Ile Thr Ser Phe Phe Ala Phe Ser Ser Thr Pro  
 50 55 60

Glu Leu Ile Phe Gly Ala Val Leu Leu Tyr Tyr Phe Arg Val Phe Glu  
 65 70 75 80

Arg Gln Ile Gly Ser Asn Lys Tyr Ala Val Phe Ile Ile Phe Ser Thr  
 85 90 95

Met Val Ser Val Leu Leu Gln Ile Leu Ala Leu Gly Tyr Met Lys Asp  
 100 105 110

Pro Ser Leu Asn Pro Leu Thr Ser Gly Pro Tyr Gly Leu Ile Phe Ala  
 115 120 125

Ser Tyr Val Pro Phe Phe Phe Asp Ile Pro Ile Ser Met Lys Phe Arg  
 130 135 140

Ile Phe Gly Leu Ser Phe Ser Asp Lys Ser Phe Val Tyr Leu Ala Gly  
 145 150 155 160

Leu Gln Leu Leu Phe Ser Ser Gly Arg Arg Ser Ile Val Pro Gly Leu  
 165 170 175

Ser Gly Ile Leu Ala Gly Leu Leu Tyr Arg Leu Asn Thr Phe Gly Val  
 180 185 190

Arg Arg Leu Lys Phe Pro Glu Phe Ala Thr Ser Leu Phe Ser Gln Leu  
 195 200 205

Ser Leu Pro Phe Ser Ser Asn Pro Tyr Gln Gly Leu Pro Ile Thr Glu  
 210 215 220

Asn Asp Gly Ser Ile Pro Ser His Gln Ala Arg Gln Ile Glu Asp Ala  
 225 230 235 240

Arg Thr Ala Thr Gln Asp Pro Thr Glu Ser Ser Ile Ala Ala Leu Val  
 245 250 255

Ser Met Gly Phe Asp Arg Ser Ala Ala Ile Gln Ala Leu Ala Leu Thr



Arg Asp Arg Glu Lys Asp Arg Ser Asp Pro Asp Tyr Asp Arg Asn Tyr  
225 230 235 240

Gly Arg Tyr Ala Arg Ser Ile Pro Ile Ser Ser Leu Asn Leu Met Pro  
245 250 255

Phe Asn Leu Gln Gln Val Gln Pro Pro Phe Val Gln Tyr Asp Asn Ala  
260 265 270

Leu Ile Arg Ser Val Arg Tyr His Lys Ile Lys Leu His Leu Ala Met  
275 280 285

Asp Leu Leu Gln Ala Leu  
290

<210> 82  
<211> 238  
<212> PRT  
<213> Zea mays

<400> 82

Ala Arg Gly Ser Ala His Tyr Arg Thr Phe Trp Val Thr Asp Ser His  
1 5 10 15

Tyr Leu Thr Ala Thr Gly Pro Ala Ile Ala Ile Phe Thr Asn Pro Thr  
20 25 30

Lys Gln Gly Tyr Asp Asp Gly Leu Gly Glu Lys Ile Ile Gly Thr Phe  
35 40 45

Gly Asn Cys Ala Gly Gly Thr Thr Pro Trp Gly Thr Val Leu Ser Ala  
50 55 60

Glu Glu Asn Phe Gln Ser Gln Val Pro Glu Ala Val Tyr Ala Asp Gly  
65 70 75 80

Ser Ala Val Asp Pro Ala Gln Cys Pro Leu Lys Ile Ser Thr Asn Gly  
85 90 95

Leu Ser Gly Gln Gly Asn Val Phe Gly Leu Ala Gly Asn Lys Tyr Gly  
100 105 110

Trp Met Val Glu Ile Asp Pro Ala Asn Ala Asn Asp Tyr Gly Val Lys  
115 120 125

His Thr Ala Leu Gly Arg Phe Arg His Glu Ala Val Ala Val Arg Ala  
130 135 140

Thr Ala Asn Gln Pro Leu Ala Val Tyr Ser Gly Cys Asp Arg Thr Ser  
145 150 155 160

Gly His Leu Tyr Lys Phe Val Ser Ala Asp Thr Val Lys Ser Pro Thr  
165 170 175

Asp Lys Gly Asn Ser Arg Leu Phe Thr Ala Gly Thr Leu Tyr Gly Ala  
180 185 190

Lys Phe Asn Ala Asp Gly Thr Gly Glu Trp Ile Ala Leu Thr Pro Asp  
195 200 205

Thr Val Val Asn Pro Val Arg Pro Ser Asp Ile Ala Val Asp Ser Ser  
210 215 220

Thr Thr Gly Ile Val Tyr Leu Pro His Pro Asp Arg Asn Gln  
225 230 235

<210> 83  
<211> 322  
<212> PRT  
<213> Zea mays

<400> 83

Pro Arg Val Arg Val Pro Leu His Arg Met Ser Asp Pro Ala Ala Gly  
1 5 10 15

Gly Ala Met Val Pro Ala Ala Gly Arg Gly Ile Ala Trp Ala Asn Gly  
20 25 30

Gly Pro Arg Phe Gly Asp Met Val Trp Ala Lys Val Lys Ser His Pro  
35 40 45

Trp Trp Pro Gly His Ile Tyr Ser Val Ser Leu Thr Asp Asp Glu Glu  
50 55 60

Val His Arg Gly His Arg Asp Gly Leu Val Leu Val Ala Phe Phe Gly  
65 70 75 80

Asp Ser Ser Tyr Gly Trp Phe Asp Pro Ser Glu Leu Val Pro Phe Glu  
85 90 95

Asp His Phe Thr Glu Lys Ala Ala Gln Gly Gly Ser Ser Arg Ser Ser  
100 105 110

Phe Ala Ala Ala Val Ala Glu Ala Val Asp Glu Val Ala Arg Arg Ser  
115 120 125

Ala Leu Ala Leu Leu Cys Pro Cys Asp Ile Pro Asp Ala Phe Arg Pro  
130 135 140

His Pro Ser Asp Gly Asn Phe Phe Leu Val Asp Val Pro Ala Phe Asp  
145 150 155 160

Thr Asp Ala Asp Tyr Gln Leu Asp Gln Ile Arg Ala Ala Arg Gln Arg  
165 170 175

Phe Val Pro Arg Lys Ala Leu Asn Tyr Leu Leu Asp Ala Ala Val Thr  
180 185 190

Gln Arg Asp Ala Ala Glu Lys Ala Ala Arg Thr Val Pro Gly Met Glu



Pro Leu His Val Asp Arg Ala Ser Gln Asp Phe Ser Ser Gln Gly Gln  
 130 135 140

Gln Gln Asn Arg Gly Pro Gly Ala Ala Gln Ala Pro Glu Glu Asp Lys  
 145 150 155 160

Ser Lys Lys Tyr Gln Ala Thr Leu Gln Leu Ala Gln Asn Leu Leu Leu  
 165 170 175

Gln Leu Gln Gln Arg Gly Ser Gly Asn Gln Ser  
 180 185

<210> 85  
 <211> 258  
 <212> PRT  
 <213> Zea mays  
 <400> 85

His Ala Ser Asp Pro Thr Glu Phe Ile Leu Glu Thr Leu Glu Gln Ser  
 1 5 10 15

Asp Pro Gln Ser Leu Ile Gln Tyr Leu Ala Tyr Gln Asp Leu Cys Val  
 20 25 30

Val Ser Glu Cys Asn Leu Glu Pro Trp Arg Arg Ala Ala Phe Phe Glu  
 35 40 45

Glu Ser Gly Glu Thr Tyr Arg Arg Ile Val Thr Ala Cys Leu Lys Pro  
 50 55 60

Leu Glu Glu Phe Thr Ser Lys Ile Ala Glu Ala Leu Glu Gly Phe Ser  
 65 70 75 80

Ser Asp Gln Pro Glu Leu Met Leu Gln Gln Ser Arg Leu Phe Ser Ala  
 85 90 95

Phe Asp Asp Ser Gln Ile Cys Thr Trp Cys Ala Arg Thr Leu Ala Gly  
 100 105 110

Leu Thr Ala Arg Ser Arg Lys Glu Asp Arg Tyr Gly Val Ala Gln Leu  
 115 120 125

Thr Gly Cys Asn Ala Ala Val Met Thr Thr Leu Leu Ser Ala Leu Val  
 130 135 140

Ala Ile Glu Thr Cys Leu Gly Lys Lys Thr Asn Pro Gln Pro Val Arg  
 145 150 155 160

Ser Leu Gly Pro Glu Asn Ile Arg Trp Thr Asn Leu Ser Thr Gly Arg  
 165 170 175

Lys Gly Asn Gly Val Ala Ile Ala Ser Thr Gln Lys Ser Gly Leu His  
 180 185 190

Lys Lys Ala Tyr Ile Met Ala Asp Val Leu Arg Thr Ser Val Tyr His

195	200	205
Ile Leu Ser Ala Phe Ile Asp Asp Leu Gln Ala Asn Ala Lys Pro Ser		
210	215	220
Ser Leu Glu Lys Asn Trp Ile Ser Glu Gly Arg Lys Pro Val Tyr Gly		
225	230	235 240
Ser Gln Ala Val Leu Val Gln Lys Leu Ile Leu Phe Ile Glu Tyr Arg		
	245	250 255

Ala Val

<210> 86  
 <211> 288  
 <212> PRT  
 <213> Zea mays

<400> 86

Gly Leu Glu Glu Glu Asp Gly Glu Glu Ala Ala Pro Ala Ser Pro Trp	
1 5 10 15	
Ala Glu Ala Asp Ala Gln Ala Gly Gly Ala Glu Ala Gln Thr Glu Val	
20 25 30	
Leu Gly Ala Gly Glu Pro Asp Leu Glu Ser Lys Ile Val Ala Ile Arg	
35 40 45	
Asp Phe Leu Glu Asp Pro Asn Gln Pro Glu Asn Glu Leu Val Ser Leu	
50 55 60	
Leu Gln Asn Leu Ala Asp Met Asp Val Thr Tyr Asn Ala Leu Gln Glu	
65 70 75 80	
Thr Asp Ile Gly Arg Gln Val Asn Gly Leu Arg Lys His Pro Ser Ala	
85 90 95	
Glu Val Arg Arg Leu Val Lys Gln Leu Ile Arg Lys Trp Lys Glu Ile	
100 105 110	
Val Asp Asp Trp Val Arg Leu Asp Asn Ser Gly Gly Asp Gly Ser Ala	
115 120 125	
Ser Val Met Thr Asp Gly Asp Ser Pro His Lys Ile Gln Gly Arg Ser	
130 135 140	
His Gln Ser Pro Arg Val Ser Gly Phe Gln Tyr Ser Pro Ser Pro Gln	
145 150 155 160	
Arg Phe Asn Gly Ser Thr Ser Glu Met Ala Asn Asn Gly Phe Glu Ser	
165 170 175	
Thr Met Asp Ala Lys Arg Arg Ala Ser Pro Val Pro Ala His His Asn	
180 185 190	

